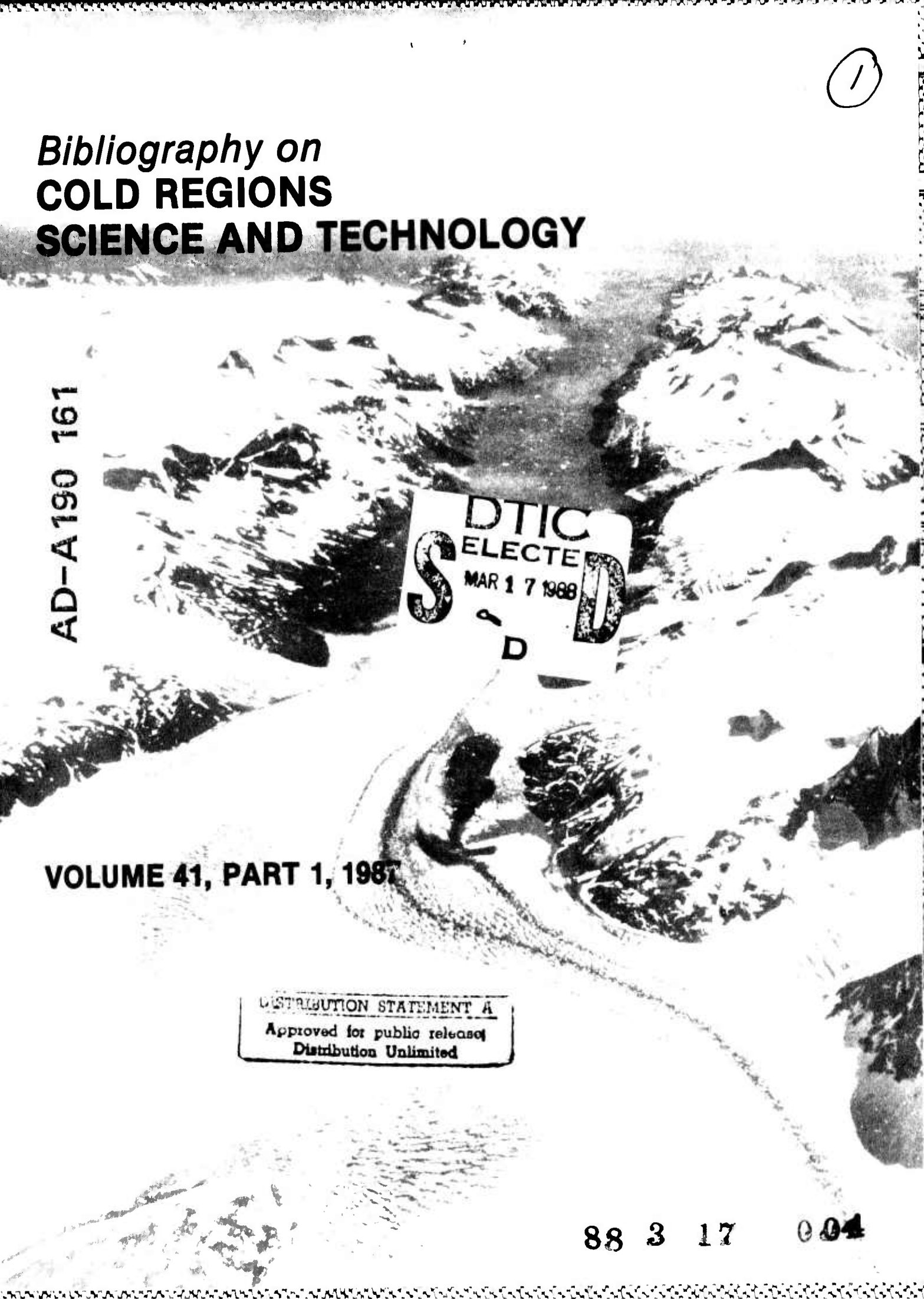
Bibliography on
COLD REGIONS SCIENCE AND TECHNOLOGY



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Bibliography on
COLD REGIONS SCIENCE AND TECHNOLOGY

VOLUME 41, PART 1, 1987

Geza T. Thuronyi, Editor

BIBLIOGRAPHY ON COLD REGIONS SCIENCE AND TECHNOLOGY
Volume 41, 1987

INTRODUCTION

The *Bibliography on Cold Regions Science and Technology* was first published in 1951 and is a continuing publication of the Cold Regions Bibliography Project in the Science and Technology Division of the Library of Congress. It is sponsored by and prepared for the Cold Regions Research and Engineering Laboratory (formerly Snow, Ice and Permafrost Research Establishment) of the U.S. Army Corps of Engineers. Volumes 1-15 were issued as the *Bibliography on Snow, Ice and Permafrost,* SIPRE Report 12. Beginning with volume 16 the designation was changed to CRREL Report 12. With volume 20 the title was changed to *Bibliography on Snow, Ice and Frozen Ground, with Abstracts,* and with volume 23 the current title was adopted.

The present volume contains material accessioned between October 1986 and September 1987. It contains full citations of 4639 items, in many cases with abstracts. Indexing for the volume is issued as Volume 41, Part 2.

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Geza T. Thuronyi, Head
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41-1
Extended summaries.
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Cloud physics, Supercooled clouds, Ice crystal growth, Ice crystal nuclei, Snowflakes, Ice fog, Microstructure, Hailstone growth, Icing, Meetings, Aerosols.

41-2
72-year Lake Michigan region snow climatology.
Dungey, M.J., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.45-48, 1 ref.
Braham, R.R., Jr.
Snowfall, Lake water, Climatology, Weather stations, Precipitation (meteorology), United States—Michigan, Lake.

41-3
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Ohtake, T., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.57-60, 2 refs.
Eaton, F.D.
Ice fog, Aerosols, Ice crystal size, Particle size distribution, Air pollution, Air temperature.

41-4
Comparison of the trace constituent composition of unrimed and rimed snow crystals.
Borys, R.D., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.61-62, 4 refs.
DeMott, P.J., Hindman, E.E., Feng, D.
Snow crystals, Snow composition, Supercooled clouds, Ice crystals, Aerosols, Chemical analysis, Hoarfrost.

41-5
Simple model of stratified precipitation for scavenging studies.
Molenkamp, C.R., Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.63-65, 9 refs.
Snowflakes, Vapor transfer, Snow physics, Cloud droplets, Phase transformations, Models, Rain, Precipitation (meteorology), Microstructure.

41-6
Experimental study of the ice column habit transitions.
Cho, N., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.100-102, 10 refs.
Hallett, J.
Ice crystal structure, Ice crystal growth, Vapor transfer, Temperature effects, Boundary layer, Velocity, Thermal diffusion.

41-7
Study of the motion of bodies simulating the fall of ice crystals.
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Ice crystals, Falling bodies, Analysis (mathematics), Velocity, Wind tunnels.

41-8
Evidence for the production of ice particles in clouds due to aircraft penetrations.
Hobbs, P.V., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.107-110, 4 refs.
Rangno, A.L.
Ice crystal nuclei, Ice crystal growth, Airplanes, Supercooled clouds, Cloud seeding.

41-9
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Deshler, T., Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.111-114, 13 refs.
Ice nuclei, Aerosols, Supercooled clouds, Ice crystal growth, Analysis (mathematics), Temperature effects.

41-10
Measurements of natural ice nuclei with a continuous flow diffusion chamber.
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Supercooled clouds, Ice crystal nuclei, Mathematical models, Experimentation, Nucleating agents.

41-11
Ice nucleus measurement intercomparisons using three systems and three natural ice nucleants.
Schnell, R.C., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.119-122, 9 refs.
Miller, S.W., Allee, P.A., Wrobel, B.
Ice nuclei, Ice crystal size, Aerosols, Nucleating agents, Temperature effects, Time factor, Nucleus counters.

41-12
Laboratory investigation of the influence of liquid water content on the temperature dependence of secondary ice crystal production during soft hail growth.
Foster, T., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.123-126, 9 refs.
Hallett, J.
Ice crystal growth, Hailstone growth, Unfrozen water content, Ice physics, Temperature effects, Experimentation, Supercooled clouds, Hoarfrost, Unfrozen water content.

41-13
Storage effects on ice-forming nuclei measurements.
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Czys, R.R.
Ice nuclei, Ice crystal growth, Aerosols, Nucleus counters, Cold storage, Equipment.

41-14
Three-parameter snow growth model.
Lo, K.K., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.197-200, 14 refs.
Passarelli, R.E.
Snow crystal growth, Particle size distribution, Ice physics, Mathematical models, Ice crystal structure, Snow crystal structure, Experimentation.

41-15
Observed changes in ice crystal type in thick stratiform clouds.
Dyer, R.M., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.201-202, 3 refs.
Glass, M.
Ice crystal structure, Supercooled clouds, Particle size distribution, Temperature effects.

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Aircraft observations of large scale cloud systems.
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Cloud physics, Particle size distribution, Unfrozen water content, Meteorological data, Storms, Airplanes, Dew point, Wind velocity.

41-17
Hydrometeor distributions in California rainbands.
Gordon, G.L., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.207-210, 4 refs.
Marwitz, J.D., Bradford, M.
Ice crystal nuclei, Precipitation (meteorology), Ice crystal growth, Temperature effects, Distribution, Cloud droplets.

41-18
Development of precipitation near the top of a maritime convective cloud.
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Ice crystal growth, Precipitation (meteorology), Cloud physics, Temperature effects, Airplanes, Unfrozen water content, Ice formation.

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High altitude tropical cirrus cloud observations.
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Stickel, P.G.
Ice crystal growth, Supercooled clouds, Unfrozen water content, Photography, Clouds (meteorology).

41-20
Ice evolution versus precipitation in the Duero Basin.
Vali, G., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.218-221, 3 refs.
Yoksas, T.C., Grube, P.G.
Ice crystal structure, Precipitation (meteorology), Cloud physics, Aerosols.

41-21
Seeding potential of stratus and nimbostratus clouds: a PEP numerical experiment.
Hirsch, J.H., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.222-225, 8 refs.
Farley, R.D., Orville, H.D.
Ice crystal structure, Cloud seeding, Models, Carbon dioxide, Nucleating agents, Temperature effects.

41-22
Observation of ice aggregation at temperatures near -50 C.
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Ice accretion, Ice adhesion, Ice crystal growth, Temperature effects, Supercooled clouds, Ice spectroscopy.

41-23
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Supercooled clouds, Remote sensing, Cloud seeding, Ice physics, Microstructure, Particle size distribution, Microwaves.

41-24
Simulation of orographic clouds with a nonlinear, time-dependent model.
Cotton, W.R., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.322-324, 5 refs.
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Supercooled clouds, Ice crystal growth, Water vapor, Snow pellets, Precipitation (meteorology), Models, Wind velocity.

41-25
Determination of ice crystal growth parameters in a new supercooled cloud tunnel.
Fukuta, N., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.325-328, 7 refs.
Kowa, M.W., Gong, N.
Ice crystal growth, Cloud chambers, Supercooled fog, Falling bodies, Dendritic ice, Grain size, Temperature effects, Hoarfrost.

41-26
Experimental and theoretical studies of ice crystal habit development.
Fukuta, N., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.329-332, 18 refs.
Swoboda, G.D., Wang, A.S.
Ice crystal growth, Cloud physics, Temperature effects, Ice crystal nuclei, Saturation.

41-27
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41-28
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Ice crystals, Storms, Cloud droplets, Snow pellets, Unfrozen water content, Temperature effects, Atmospheric disturbances.

41-29
Electrical, thermal, and diffusional properties of columnar and planar ice crystals of finite length.
Wang, P.K., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.338-341, 9 refs.
Chuang, C.H.
Ice crystal structure, Ice physics, Dendritic ice, Ice electrical properties, Ice thermal properties, Analysis (mathematics).

41-30
Visual cloud histories related to first echo formation in northeast Colorado cumulus.
Knight, C.A., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.342-345, 8 refs.
Hall, W.D., Roskowski, P.M.
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41-31
Primary ice crystal production in cumulus congestus clouds of eastern Montana.
Cerni, T.A., Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.346-349, 11 refs.
Ice crystal growth, Cloud physics, Supercooled clouds, Temperature effects, Distribution.

41-32
Liquid water limitation to ice particle growth in Montana cumulus congestus clouds.
Super, A.B., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.350-353, 4 refs.
Holroyd, E.W., III, McPartland, J.T.
Ice crystal growth, Supercooled clouds, Ice crystal nuclei, Unfrozen water content, Cloud seeding.

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Ratley, C.W.
Ice crystal nuclei, Cloud droplets, Cloud physics, Unfrozen water content, Precipitation (meteorology), Temperature effects.

41-34
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41-35
Graupel characteristics in relation to the dynamics of Florida cumuli.
Walsh, P.A., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.362-365, 4 refs.
Reinking, R.F., Cunning, J.B.
Snow pellets, Supercooled clouds, Microstructure, Cloud physics, Cloud seeding, Cloud droplets, Unfrozen water content.

41-36
Case study of hydrometeors in Florida cumuli.
Parungo, F., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.366-369, 12 refs.
Nagamoto, C.
Supercooled clouds, Precipitation (meteorology), Ice crystal nuclei, Unfrozen water content, Snow pellets, Cloud seeding, Freezing.

41-37
Vertical continuity of microphysical processes and updrafts in supercooled portions of Florida cumuli.
Xu, J.-L., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.370-373, 5 refs.
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Cloud physics, Supercooled clouds, Ice crystal growth, Unfrozen water content, Temperature effects, Latent heat.

41-38
Glaciating characteristics of Montana and Florida summer cumuli: Comparisons based on observations and modeling.
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Supercooled clouds, Ice crystal growth, Ice crystal nuclei, Cloud physics, Unfrozen water content, Temperature effects, Air temperature, Models.

41-39
Analysis of silver in individual ice particles after cloud seeding.
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41-40
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Jameson, A.R.
Snow pellets, Snow melting, Ice melting, Ice nuclei, Supercooled clouds, Rain, Freezing, Humidity.

41-42
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Levizzani, V.
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41-43
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41-44
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Supercooled clouds, Aircraft icing, Ice crystal nuclei, Sounding, Ice accretion.

41-45
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Supercooled clouds, Cloud droplets, Unfrozen water content, Temperature effects.

41-46
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Moninger, W.R., Pasqualucci, F.
Cloud droplets, Supercooled clouds, Snow pellets, Temperature effects, Ice melting, Radar echoes, Velocity, Ice crystal structure.

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41-48
Hailstone concentration and size at the ground and at the melting level.
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English, M.
Hailstone growth, Particle size distribution, Temperature effects, Snow pellets, Ice spectroscopy, Mathematical models, Melting points.

41-49
Hail formation in an Oklahoma multicell storm.
Ziegler, C.L., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.427-430, 12 refs.
Knight, N.C.
Hailstone growth, Ice formation, Storms, Supercooled clouds, Hailstone structure, Radar echoes, Wind factors, Models.

41-50
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Nelson, S.P., Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.431-433, 8 refs.
Hailstone growth, Storms, Radar echoes, Wind factors, Supercooled clouds, Ice crystal nuclei, Models.

41-51
Initiation mechanisms and rates of development of graupel particles and hailstones in High Plains storms: a numerical evaluation.
Heymsfield, A.J., Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.434-437, 8 refs.
Hailstone growth, Ice crystal size, Ice nuclei, Time factor, Models.

41-52
Sensitivity of hailstone growth to variations in microphysical parameters.
Foster, M.P., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.438-441, 9 refs.
Pflaum, J.C., Nelson, S.P.
Microstructure, Cloud droplets, Hailstone growth, Models, Ice formation, Physical properties, Thunderstorms, Hail prevention.

41-53
Measurement and interpretation of hailstone density and terminal velocity.
Knight, N.C., et al, Conference on Cloud Physics, Chicago, IL, Nov. 15-18, 1982. [Extended summaries], Boston, American Meteorological Society, 1982, p.442-445, 2 refs.
Heymsfield, A.J.
Hailstone growth, Ice crystal structure, Coalescence, Falling bodies, Velocity, Ice volume, Ice density, Models.

41-54
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Hailstone structure, Supercooled clouds, Cloud droplets, Ice crystal structure, Air entrainment, Experimentation, Ice crystal size.

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41-122
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Ice cover thickness, Radar echoes, Ice surveys, River ice, Lake ice.

41-123
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Sokolov, B.L., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.138-147, In Russian with English summary. 11 refs.
Permafrost hydrology, Naleds, Systems analysis, Distribution, Statistical analysis, Permafrost distribution.

41-124
Glacioclimatic conditions in the European Arctic in the Late Holocene. [O gliatsioklimaticheskikh usloviiakh v evropeiskoi Arktike v pozdnem golotsene],
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Troitskii, L.S., Skobeeva, E.I., Punning, IA.-M.K.
Paleoecology, Glaciation, Climatic changes.

41-125
Maximum southward advance of the Late Pleistocene ice sheet of the Kara center. [O maksimal'nom prodvizhenii na iug pozdneplеistotsenovogo lednikovogo pokrova Karskogo tsentra],
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Ice sheets, Pleistocene, Geological maps, Mapping, Glacier flow, Glacial deposits, Moraines, USSR—Kotuy River.

41-126
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Klimanov, V.A.
Paleoecology, Pleistocene, Vegetation patterns, Periglacial processes, Geocryology, Cryogenic soils.

41-127
Hydrologic investigations in the Mimer River basin (Spitsbergen) in 1983. [Gidrologicheskie issledovaniia v basseine reki Mimer na Shpitsbergene v 1983 g.],
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Kodakov, V.G.
River basins, Continuous permafrost, Permafrost hydrology, Surface drainage, Glacier ablation, Snow surveys, Glacial hydrology, Norway—Spitsbergen.

41-128
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Musoev, Z.
Alpine glaciation, Glacial rivers, Runoff, Mapping.

41-129
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Kurochkin, IU.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.170-174, In Russian with English summary. 5 refs.
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41-130
Radiation balance of Pamir slopes. [Radiatsionnyi balans sklonov v usloviiakh Pamira],
Finaev, A.F., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.174-180, In Russian with English summary. 10 refs.
Alpine glaciation, Slope orientation, Radiation balance, Glacier ablation.

41-131
Forest fire effect on chemical composition of snow cover in the Amur River area. [Vliianie lesnykh pozharov na formirovanie khmicheskogo sostava snezhnogo pokrova Priamur'ia],
Ivanov, A.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.180-186, In Russian with English summary. 6 refs.
Forest land, Snow composition, Pollution, Forest fires, Snow cover distribution, Meltwater, Forest canopy, Chemical composition.

41-132
Genetic types of snow avalanches in Dzhungarskiy Alatau. [Geneticheskie tipy snezhnykh lavin Dzhungarskogo Alatau],
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Slope processes, Avalanches, Classifications, Alpine landscapes, Meteorological factors.

41-133
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Vtiurina, E.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.190-194, In Russian with English summary. 4 refs.
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Permafrost structure, Ice veins, Ice wedges, Ice formation.

41-134
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Bulnitskii, A.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.195-201, In Russian with English summary. 3 refs.
Sorotokin, M.M.
Glacier beds, Bottom topography, Glacial erosion, Glacier ice, Mathematical models.

41-135
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Chernous, P.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.201-206, In Russian with English summary. 11 refs.
Khristoev, IU.V.
Avalanche formation, Snow accumulation, Snow cover distribution, Snow surveys, Snow cover stability.

41-136
Methods of compiling medium-scale maps of genetic avalanche types (exemplified by the northern macroslope of Dzhungarskiy Alatau). [Metodika sostavleniia srednemasshtabnykh kart geneticheskikh tipov lavin (na primere severnogo makrosklona Dzhungarskogo Alatau)],
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Zolotarev, E.A.
Snow surveys, Mapping, Avalanche formation, Classifications, Avalanche engineering.

41-137
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Il'ina, E.A.
Slope processes, Engineering geology, Nivation, Avalanches, Snow surveys, Mapping, Glaciology, Snowdrifts, Naleds, Mudflows.

41-138
Strength of natural and artificially built-up ice on an ice crossing over the Lena River. [Prochnost' namorozhennogo i estestvennogo l'da na ledianoi pereprave cherez Lenu],
Deriugin, A.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.219-222, In Russian with English summary. 3 refs.
Tiulina, T.IU.
Ice (construction material), Artificial ice, Ice strength, Ice crossings, River ice, Ice cover strength.

41-139
Optimization of layer-by-layer artificial build-up of ice. [Ob optimizatsii posloinogo namorazhivaniia l'da],
Latalin, D.A., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.222-225, In Russian with English summary. 1 ref.
Ice (construction material), Artificial ice, Ice crossing, River ice, Ice runways, Ice roads.

41-140
Wind velocity effect on the process of ice formation in a sprinkler cone. [Vliianie skorosti vetra na protsess l'doobrazovaniia v fakele iskusstvennogo dozhdia],
Sosnovskii, A.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.225-230, In Russian with English summary. 6 refs.
Artificial ice, Ice accretion, Freezing rate, Wind factors.

41-141
Remarks on G.I. Smorygin's book titled "Theoretical basis for obtaining loose-structure ice". [Neskol'ko zamechanii po knige G.I. Smorygina "Teoreticheskie osnovy polucheniia l'da rykhloi struktury"],
Sosnovskii, A.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Jan. 1986, No.55, p.231-234, In Russian. 5 refs. For book being reviewed see 39-1154.
Artificial ice, Ice structure, Ice (construction material).

41-142
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Symonds, G., comp, Peterson, I.K., comp.
Sea ice distribution, Ice models, Remote sensing, Ice detection, Ice forecasting, Ice cover thickness, Seasonal variations, Icebergs, Meetings, Drift.

41-143
Northern Hemisphere sea ice variability: observed and simulated.
Walsh, J.E., *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.3-20, 15 refs.
Sea ice distribution, Ice mechanics, Drift, Thermodynamics, Ice cover thickness, Ice models, Seasonal variations, Periodic variations, Arctic Ocean.

41-144
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Sea ice distribution, Drift, Ice conditions, Ice volume, Analysis (mathematics), Velocity, Climatic factors, Greenland Sea.

41-145
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Sea ice distribution, Ice conditions, Drift, Ice physics, Ice floes, Pack ice, Ice cover thickness, Seasonal variations, Labrador Sea.

41-146
Air-sea heat flux and the seasonal distribution of sea ice over the North East Newfoundland Shelf.
Symonds, G., *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.88-114, Refs. p.112-114.
Sea ice distribution, Heat flux, Radiation balance, Ice growth, Ice navigation, Ocean currents, Wind factors, Seasonal variations, Canada—Newfoundland.

41-147
Buoyancy flux-driven cyclonic gyre in the Labrador Sea.
Seung, Y.-H., *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.115-161, Refs. p.159-161.
Sea ice distribution, Ice conditions, Atmospheric disturbances, Ice edge, Analysis (mathematics), Climatic factors, Labrador Sea.

41-148
Large-scale ice-ocean modeling.
Hibler, W.D., III, *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, MP 2142, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.165-184, 11 refs.
Ice water interface, Sea ice distribution, Drift, Ice edge, Ocean currents, Analysis (mathematics).
Utilizing results from diagnostic ice-ocean models of the Arctic, Greenland and Norwegian Seas, physical characteristics and problems related to large-scale ice-ocean modeling are examined. In these models a 14-level baroclinic ocean model has been coupled to a two-thickness-level dynamic-thermodynamic sea ice model utilizing a nonlinear plastic ice interaction. Simulations of the ocean (for the Arctic Basin only) without the ice cover, and of the ice without the ocean model, are also done to examine certain physical problems.

41-149
Numerical study of sea ice and ocean circulation in the Arctic.
Semtner, A.J., Jr., *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.189-224, 30 refs.
Sea ice distribution, Ice models, Ocean currents, Ice mechanics, Ice conditions, River flow, Climatic factors.

41-150
Coupled ice-mixed layer model for the Greenland Sea.
Houssais, M.N., *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, MP 2143, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.225-260, 29 refs.
Ice models, Ice water interface, Sea ice, Thermodynamics, Seasonal variations, Heat flux, Convection, Ice melting, Freezing, Analysis (mathematics), Greenland Sea.
A thermodynamic coupled ice-mixed layer model, designed to study the seasonal cycle of the ice-ocean interactions in the Greenland Sea is presented. The sea-ice model assumes a constant ice thickness and considers only the variations of ice compactness under the effect of the atmospheric and oceanic heat fluxes. The mixed-layer model predicts the rate of penetrative convection within the water column as a result of both the surface buoyancy flux and the mechanical energy input. The mixed layer is embedded in a three-dimensional primitive equations model which calculates the ocean velocity field and its contribution to the time evolution of the temperature-salinity distribution, and also, following Adamec et al. (1981), helps in describing the pycnocline characteristics at the mixed layer base. The model has been tested without advection or horizontal diffusion through a five-years simulation. The annual entrainment-retreat cycle of the mixed layer is well reproduced together with the advance-decay cycle of the ice cover. The horizontal distribution of the mixed layer depth is in agreement with our knowledge of the effect of an ice cover upon a mainly buoyancy driven oceanic convection.

41-151
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Ostoja-Starzewski, M., et al, *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.267-281, 7 refs.
Jessup, R., Venkatesh, S.
Ice mechanics, Sea ice, Ice floes, Pack ice, Viscoelasticity, Analysis (mathematics).

41-152
Statistical kinematics for the sea ice discontinuum.
Thorndike, A.S., *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.282-295, 6 refs.
Ice mechanics, Sea ice, Drift, Ice cracks, Ice deformation.

41-153
Effects of the annual ice-cover on tidal currents and freshwater content of Canadian inland waters.
Prinsenberg, S.J., *Canadian technical report of hydrography and ocean sciences*, June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.298-327, 24 refs.
Ice cover effect, Tidal currents, Ice conditions, River flow, Water chemistry, Salinity, Seasonal variations, Water content, Canada—Hudson Bay, Canada—Lancaster Sound.

41-154
Field observations of flow patterns generated by an ice keel in stratified flow.
Topham, D.R., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.328-349, 8 refs.
Pite, H.D., Johnston, P., Richards, D.L.
Ice cover effect, Heat transfer, Ice water interface, Water flow, Ice bottom surface, Boundary layer, Models.

41-155
Long-range prediction of iceberg severity in the Labrador Sea.
Wittman, W.I., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.355-385, 8 refs.
Hester, L.H., Dehn, W.S., Walsh, J.E.
Icebergs, Ice conditions, Ice forecasting, Long range forecasting, Statistical analysis, Labrador Sea.

41-156
Evaluation of the international ice patrol drift model.
Murphy, D.L., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.387-409, 4 refs.
Anderson, I.
Icebergs, Drift, Models, Wind factors.

41-157
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Marko, J.R., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9. 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.413-428, 4 refs.
Fissel, D.B., Birch, J.R.
Icebergs, Sea ice distribution, Models, Air temperature, Wind factors, Ice conditions.

41-158
Iceberg splitting and its implications for deterioration modelling.
Diemand, D., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.429-440, 9 refs.
Lever, J.H.
Icebergs, Ice deterioration, Ice cracks, Models, Ice navigation, Mass balance, Ablation.

41-159
On the deterioration of a grounded iceberg.
Venkatesh, S., *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.442-471, 9 refs.
Icebergs, Grounded ice, Ice deterioration, Mass balance, Water waves, Water erosion, Calving, Aerial surveys, Analysis (mathematics).

41-160
Temperature, salinity and density profiles around icebergs in the Labrador Sea.
Pearson, D.E., *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.472-491, 8 refs.
Sea water, Icebergs, Water temperature, Water chemistry, Salinity, Density (mass/volume), Convection, Labrador Sea.

41-161
Enhancement of NOAA AVHRR digital data for sea ice analysis in an operational environment.
Ramsay, B.R., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.495-508, 14 refs.
Zieger, M.A.J.
Sea ice distribution, Remote sensing, Ice conditions, Computer applications, Seasonal variations.

41-162
Motion of ice in the Beaufort Sea from satellite and aircraft images.
Gower, J.F.R., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.509-522, 2 refs.
Cherniawsky, J.Y., Borstad, G.A.
Ice mechanics, Drift, Sea ice, Remote sensing, Ice conditions, Velocity, Beaufort Sea.

41-163
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Williams, D.R.P., *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.526-536, 6 refs.
Sea ice distribution, Ice edge, Ice conditions, Remote sensing, Microwaves, Accuracy, Beaufort Sea.

41-164
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Ice conditions, Remote sensing, Climatology, Microwaves, Sea ice distribution, Mapping, Statistical analysis.

41-165
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Thayer, N.B.
Icebergs, Ice detection, Side looking radar, Ice conditions, Sea ice distribution, Remote sensing.

41-166
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Falkingham, J.C., *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.557-560.
Icebergs, Ice forecasting, Sea ice distribution, Canada.

41-167
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Ransom, J.A.N., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.561-582, 6 refs.
Benoit, J.R., Dello Stritto, F.J.
Ice conditions, Sea ice distribution, Icebergs, Ice forecasting, Offshore structures, Ice navigation, Canada—Newfoundland.

41-168
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Nazarenko, D.M., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.583-597, 7 refs.
Miller, J.D.
Ice mechanics, Drift, Sea ice, Remote sensing, Measuring instruments, Wind factors, Velocity.

41-169
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Sea ice distribution, Ice conditions, Ice detection, Ice forecasting, Icebreakers, Drift, Monitors, Offshore drilling, Beaufort Sea.

41-170
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Steen, J.W., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.615-650.
Trobak, J.D.
Ice forecasting, Sea ice distribution, Ice mechanics, Remote sensing, Computer applications, Wind factors, Ocean currents, Beaufort Sea.

41-171
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Frederking, R.M.W., et al, *Canadian technical report of hydrography and ocean sciences,* June 1986, No.73, Canadian East Coast Workshop on Sea Ice, Bedford, Quebec, Jan. 7-9, 1986. Proceedings. Compiled by G. Symonds and I.K. Peterson, p.651-663, 15 refs.
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41-172
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Road maintenance, Winter maintenance, Ground thawing, Economic analysis, Damage, Snowmelt, Ice melting.

41-173
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Cattaneo, L., et al, *U.S. National Bureau of Standards. National Engineering Laboratory. Center for Building Technology. Report,* January 1981, No.NBSIR-81-2199, 88p., PB81-164550, Refs. passim.
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41-174
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Pasquarell, G.C., Ruggles, R.W.
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41-175
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Hale, D., *Pipeline and gas journal,* May 1986, 213(5), p.31-32.
Ground thawing, Frozen ground, Tanks (containers), Equipment, Frost protection, Artificial thawing.

41-176
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Ice roads, Floating ice, Ice runways, Velocity, Loads (forces), Vehicles, Water waves, Ice cover thickness, Mathematical models.

41-177
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41-178
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41-179
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Power line icing, Snow removal, Transmission lines, Snowfall, Damage, Countermeasures, Electric heating, Ice melting, Winter maintenance.

41-180
Countermeasures against damage by heavy snowfall in Yonago District.
Takahashi, T., *Electric lighting and facilities in railways,* 1985, Vol.35, p.17-18, In Japanese.
Snow removal, Railroad tracks, Power line icing, Electric heating, Snow melting, Countermeasures, Damage.

41-181
Countermeasures against damage by heavy snowfall in Kinki Nippon railways.
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Railroad tracks, Snow removal, Electric heating, Ice melting, Snow melting, Snowfall, Damage, Countermeasures, Icing.

41-182
Countermeasures against damage by snow/ice on switches in European countries.
Takekuwa, Y., *Electric lighting and facilities in railways,* 1985, Vol.35, p.21-25, In Japanese.
Railroads, Ice removal, Snow removal, Electric heating, Railroad equipment, Icing, Damage, Countermeasures.

41-183
Countermeasures against damage by snowfall on transmission line in Hokkaido District.
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Power line icing, Snow removal, Transmission lines, Electric heating, Thermal insulation, Snowfall, Snow accumulation, Countermeasures, Damage.

41-184
Countermeasures against damage by snowfall on distribution facilities.
Kato, I., *Electric lighting and facilities in railways,* 1985, Vol.35, p.29-32, In Japanese.
Power line icing, Ice removal, Railroad tracks, Snow accumulation, Snow removal, Ice accretion, Countermeasures, Snowfall, Reinforced concretes.

41-185
Countermeasures against ice coating on trolley wires in Chiba District.
Terada, S., *Electric lighting and facilities in railways,* 1985, Vol.35, p.37-38, In Japanese.
Power line icing, Railroads, Ice forecasting, Weather forecasting, Warning systems, Countermeasures.

41-186
Countermeasures against damage by snowfall on distribution cable arrestor. *Electric lighting and facilities in railways,* 1985, Vol.35, p.41-43, In Japanese
Power line icing, Snow removal, Railroads, Ice removal, Snow accumulation, Countermeasures, Snowfall, Damage.

41-187
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Seppälä, M.
Frozen ground physics, Frost penetration, Swamps, Snow depth, Ground water, Ground ice, Air temperature, Vegetation factors, Seasonal freeze thaw, Wind factors, Finland—Kuusamo.

41-188
Difference in energy between cubic and hexagonal ice.
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Ice physics, Molecular energy levels, Ice crystal structure, High pressure ice, Cubic ice, Heat balance, Enthalpy, Molecular structure.

41-189
Structure and dynamics of forest landscapes in Karelia. [Struktura i dinamika lesnykh landshaftov Karelii],
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Shcherbakov, N.M., ed.
Taiga, Mapping, Forest land, Swamps, Microclimatology, Lakes, Human factors, Subarctic landscapes, Landscape types, Classifications, Cryogenic soils.

41-190
Types of landscapes in the Karelian ASSR. [Tipy landshafta Karel'skoĭ ASSR],
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Taiga, Mapping, Forest land, Microclimatology, Cryogenic soils, Forest soils, Classifications, Subarctic landscapes, Human factors, Lakes, Swamps.

41-191
Biocenotic structure of forests in different landscapes of central taiga. [Biogeotsenoticheskaia struktura lesov razlichnykh tipov landshafta podzony srednei taĭgi],
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Shelekhov, A.M.
Taiga, Plant ecology, Vegetation patterns, Ecosystems, Landscape types, Classifications.

41-192
Phytocenotic and ecologic peculiarities of forest types prevailing in different landscapes of central taiga. [Fitotsenoticheskie i ekologicheskie osobennosti preobladaiushchikh tipov lesa v razlichnykh landshaftakh srednei taĭgi],
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Pyzhin, A.F.
Taiga, Plant ecology, Cryogenic soils, Plant physiology, Biomass, Landscape types, Vegetation patterns.

41-193
Pine forest successions in different landscape types of the central taiga subzone in the Karelian ASSR. [Suktsessii sosnovykh lesov v razlichnykh tipakh landshafta podzony srednei taĭgi Karel'skoĭ ASSR],
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Taiga, Landscape types, Plant ecology, Forest fires, Revegetation, Paludification.

41-194
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Plains, Paludification, Lakes, Moraines, Topographic features.

41-195
Peculiarities of rock pressure development in mining excavations when the roof is a difficultly caving permafrost. [Osobennosti formirovaniia gornogo davleniia v vyrabotannom prostranstve pri razrabotke plastov s trudnoobrushaiushchimisia mnogoletnemerzlymi porodami krovli],
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Coal, Rock mechanics, Mining, Excavation, Permafrost.

41-196
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Coal, Mining, Thermal regime, Temperature control.

41-197
Improving the efficiency of geochemical exploration methods in taiga (8th Session of the Siberian branch of SGPM) summaries of reports. [Povyshenie effektivnosti geokhimicheskikh metodov poiskov v taezhnykh raĭonakh (VIII sessiia Sibirskogo otdeleniia SGPM) Tezisy dokladov],
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Kozlov, V.D., ed.
Taiga, Permafrost distribution, Permafrost depth, Soil surveys, Geochemistry, Remote sensing, Vegetation factors, Human factors.

41-198
Strategy of geochemical exploration in the taiga zone. [Strategiia geokhimicheskikh poiskov v taezhnoĭ zone],
Tauson, L.V., Povyshenie effektivnosti geokhimicheskikh metodov poiskov v taezhnykh raĭonakh (VIII sessiia Sibirskogo otdeleniia SGPM) Tezisy dokladov. (Improving the efficiency of geochemical exploration methods in taiga (8th Session of the Siberian branch of SGPM) summaries of reports). Edited by V.D. Kozlov, Irkutsk, 1986, p.10-14, In Russian.
Remote sensing, Cryogenic soils, Taiga, Soil surveys, Geochemistry, Soil composition, Chemical composition, Soil chemistry.

41-199
Biogeochemical exploration for mineral deposits in forest lands and taiga. [Biogeokhimicheskie poiski mestorozhdeniĭ poleznykh iskopaemykh v lesnykh i taezhnykh raĭonakh],
Kovalevskiĭ, A.L., Povyshenie effektivnosti geokhimicheskikh metodov poiskov v taezhnykh raĭonakh (VIII sessiia Sibirskogo otdeleniia SGPM) Tezisy dokladov. (Improving the efficiency of geochemical exploration methods in taiga (8th Session of the Siberian branch of SGPM) summaries of reports). Edited by V.D. Kozlov, Irkutsk, 1986, p.32-37, In Russian.
Taiga, Forest soils, Geochemistry, Exploration, Minerals, Cryogenic soils.

41-200
Increasing the efficiency of geochemical exploration for gold ore in the economically developing taiga zone. [Povyshenie effektivnosti poiskovo-geokhimicheskikh rabot na rudnoe zoloto v antropogennykh landshaftakh taezhnoĭ zony],
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Zagoskina, A.I.
Taiga, Human factors, Soil pollution, Geochemistry, Exploration, Minerals, Economic development.

41-201
Possibilities and prospects of geochemical exploration in northern taiga permafrost areas. [Vozmozhnosti i perspektivy geokhimicheskikh poiskov v kriogennykh severotaezhnykh landshaftakh],
Makarov, V.N., Povyshenie effektivnosti geokhimicheskikh metodov poiskov v taezhnykh raĭonakh (VIII sessiia Sibirskogo otdeleniia SGPM) Tezisy dokladov. (Improving the efficiency of geochemical exploration methods in taiga (8th Session of the Siberian branch of SGPM) summaries of reports). Edited by V.D. Kozlov, Irkutsk, 1986, p.158-159, In Russian.
Taiga, Permafrost distribution, Permafrost depth, Geochemistry, Exploration.

41-202
Biogeochemical indications of gold-bearing deposits in permafrost areas of the northeastern USSR. [Poiskovo-biogeokhimicheskie priznaki zolotorudnykh mestorozhdenii v merzlotnykh landshaftakh Severo-Vostoka SSSR],
Ursova, O.A., Povyshenie effektivnosti geokhimicheskikh metodov poiskov v taezhnykh rafonakh (VIII sessiia Sibirskogo otdeleniia SGPM) Tezisy dokladov. (Improving the efficiency of geochemical exploration methods in taiga (8th Session of the Siberian branch of SGPM) summaries of reports). Edited by V.D. Kozlov, Irkutsk, 1986, p.226-227, In Russian.
Taiga, Geochemistry, Permafrost distribution, Permafrost depth, Exploration, Gold, Vegetation factors, Lichens, Mosses.

41-203
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Alpine landscapes, Economic development, Natural resources, Mining, Polar regions, Transportation, Construction, Cost analysis.

41-204
Economic prerequisites for development in the northern Urals. [Ekonomicheskie predposylki osvoeniia severnykh rafonov Urala],
Pakhomov, V.P., Problemy osvoeniia prirodnykh resursov Ural'skogo Severa (Problems of developing natural resources in the northern Urals) edited by V.P. Pakhomov, Sverdlovsk, 1985, p.3-14, In Russian. 5 refs.
Alpine landscapes, Construction materials, Transportation, Economic development, Polar regions, Natural resources, Economic analysis.

41-205
Some aspects of economic development of northern regions. [Nekotorye aspekty ekonomicheskogo osvoeniia severnykh territorii],
Loginov, V.G., Problemy osvoeniia prirodnykh resursov Ural'skogo Severa (Problems of developing natural resources in the northern Urals) edited by V.P. Pakhomov, Sverdlovsk, 1985, p.15-21, In Russian. 2 refs.
Natural resources, Economic development, Transportation, Construction, Urban planning, Subpolar regions, Economic analysis.

41-206
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Maslennikov, V.V., Problemy osvoeniia prirodnykh resursov Ural'skogo Severa (Problems of developing natural resources in the northern Urals) edited by V.P. Pakhomov, Sverdlovsk, 1985, p.28-32, In Russian.
Transportation, Natural resources, Mining, Railroads, Cost analysis, Subpolar regions, Economic development, Alpine landscapes.

41-207
Determining the economic and ecological effects of forest utilization in the North. [Opredelenie ekonomiko-ekologicheskogo effekta lesopol'zovaniia v rafonakh Severa],
Fokina, N.M., et al, Problemy osvoeniia prirodnykh resursov Ural'skogo Severa (Problems of developing natural resources in the northern Urals) edited by V.P. Pakhomov, Sverdlovsk, 1985, p.33-38, In Russian. 2 refs.
Guliaeva, O.V.
Taiga, Forestry, Plant ecology, Cost analysis, Subpolar regions.

41-208
Computerized simulation of economic development of a mineral-raw material base in the northern Urals. [Nekotorye voprosy formirovaniia imitatsionnoi ekonomiko-matematicheskoi modeli osvoeniia mineral'no-syr'evoi bazy Ural'skogo Severa],
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Lysyi, I.B.
Mathematical models, Economic development, Natural resources, Surveys, Alpine landscapes, Transportation, Construction.

41-209
Effectiveness of different versions of mining development in the Polar Urals. [Effektivnost' variantov razrabotki mestorozhdenii Poliarnogo Urala],
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Mining, Subarctic regions, Alpine landscapes, Coal, Metals, Cost analysis.

41-210
Methods of estimating economic losses from water pollution by dredging. [Metodika otsenki ekonomicheskogo ushcherba ot zagriazneniia vodoemov gidromekhanizirovannymi razrabotkami],
Matveev, A.A., Problemy osvoeniia prirodnykh resursov Ural'skogo Severa (Problems of developing natural resources in the northern Urals) edited by V.P. Pakhomov, Sverdlovsk, 1985, p.63-66, In Russian.
Dredging, Water supply, Earthwork, Construction, Subarctic regions.

41-211
Persistence in the size distribution of surficial bed material during an extreme snowmelt flood.
Andrews, E.D., et al, *Water resources research*, Feb. 1986, 22(2), p.191-197, 20 refs.
Erman, D.C.
Sediment transport, Snowmelt, Floods, Stream flow, Gravel.

41-212
Radiation budget of a subarctic woodland canopy.
Lafleur, P., et al, *Arctic*, June 1986, 39(2), p.172-176, 10 refs.
Adams, P.
Forest land, Snowmelt, Forest canopy, Radiation balance, Heat flux.

41-213
Brittleness of reinforced concrete structures under arctic conditions.
Kivekäs, L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1986, CR 86-02, 20p., ADA-170 792, 9 refs.
Korhonen, C.
Reinforced concretes, Brittleness, Concrete structures, Transportation, Cold weather tests, Cracking (fracturing).
The behavior of reinforced and unreinforced concrete beams was studied under impact loading at low temperatures, and the results were compared to the behavior of reinforcing steel (rebar) in Charpy-V impact tests. Transition temperatures as low as -30 C were obtained for the rebars in the Charpy-V tests, whereas no brittle failures occurred in the rebars in the reinforced concrete beams at temperatures as low as -63 C, even in beams where the rebars were intentionally notched. The impact strength of unreinforced concrete increases considerably at lower temperatures, thus reducing cracking of reinforced concrete structures and significantly increasing the safety of lightly reinforced structures.

41-214
Antarctic docking facility study carried out by Han-Padron Associates. *HPA news*, Summer 1986, n.p.
Docks, Construction, Antarctica—Palmer Station.
The study was made to determine the requirements for upgraded dock space at Palmer Station to accommodate the much larger supply/research/icebreaker vessel which replaces the now retired *Hero*. Five alternative concepts were considered; the recommended alternative provides for a prefabricated jack-up structure, towed to the site and jacked into position on large-diameter steel legs.

41-215
Aerosol ice-forming activation mechanism.
Gzirishvili, T.G., *Journal de recherches atmosphériques*, Apr.-Sep. 1985, 19(2-3), p.309-314, With French summary. 14 refs.
Ice formation, Aerosols, Ice nuclei, Phase transformations, Temperature measurement, Models, Water vapor, Supersaturation.

41-216
Grazing research at northern latitudes.
NATO Advanced Research Workshop on Grazing Research at Northern Latitudes, Hvanneyri, Iceland, Aug. 5-10, 1985, NATO ASI series. Series A: Life sciences, Vol.108, New York, Plenum Press, 1986, 374p., Refs. passim.
Gudmundsson, O., ed.
Grazing, Ground water, Ecosystems, Vegetation, Plants (botany), Biomass, Environmental protection, Soil erosion, Stream flow, Animals.

41-217
Ocean engineering and the environment—Oceans '85 Conference, Vol.1.
Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985, [1985], 2 vols. (1364p.), Refs. passim. For selected papers see 41-218 through 41-229, and 41-1913 through 41-1915.
Oceanography, Ice detection, Underwater acoustics, Engineering, Sea ice distribution, Icebergs, Ice cover effect, Ice conditions, Offshore structures, Ice loads, Remote sensing.

41-218
Iceberg detection by radar.
Miller, J.D., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985. Proceedings. Vol.1, [1985], p.405-410, 8 refs.
Satterfield, K.M.
Ice detection, Icebergs, Radar echoes, Offshore drilling.

41-219
Cryospheric data management system for special sensor microwave imager DMSP data.
Weaver, R., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985. Proceedings. Vol.1, [1985], p.411-415, 12 refs.
Barry, R.G.
Sea ice distribution, Remote sensing, Microwaves, Design, Computer applications.

41-220
Ice management on the Grand Banks.
Hotzel, I.S., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985. Proceedings. Vol.1, [1985], p.416-419, 2 refs.
Miller, J.D.
Sea ice distribution, Ice detection, Ice forecasting, Ice conditions, Ice loads, Offshore structures, Countermeasures, Drift, Icebergs, Canada—Newfoundland—Grand Banks.

41-221
Science program of the FRAM experiments in the Eastern Arctic Ocean.
Baggeroer, A.B., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985. Proceedings. Vol.1, [1985], p.420-428, 29 refs.
DiNapoli, F.R., Manley, T.O.
Drift stations, Seismic surveys, Underwater acoustics, Ice cover effect, Oceanography, Drift, Helicopters, Ice edge, Geophysical surveys.

41-222
Deployment and operation of the ice stations for the FRAM program.
Heiberg, A., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985. Proceedings. Vol.1, [1985], p.429-432.
Hielscher, A.
Drift stations, Ice conditions, Logistics, Ice navigation, Ice breakup, Remote sensing, Airplanes.

41-223
Automatic Arctic profiling system for oceanography under ice.
Van Leer, J.C., Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985. Proceedings. Vol.1, [1985], p.433-436, 1 ref.
Oceanography, Subglacial observations, Drift, Ice edge, Ice floes, Measuring instruments.

41-224
R/V *Polar Duke*—a new vessel for antarctic research support.
Inderbitzen, A.L., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985. Proceedings. Vol.1, [1985], p.437-440.
Betzel, A., Eichenberger, M., Leiby, J.
Icebreakers, Ice navigation, Ice breaking, Equipment.
The National Science Foundation has introduced a new vessel for polar research into the U.S. fleet. The R/V *Polar Duke* was originally designed and constructed for high-arctic expeditionary use in pack ice and all winter operation. In late 1984, the vessel was converted into a research ship for polar operations and is now operating in the vicinity of the Antarctic Peninsula. The 21- ft (66.8m) vessel has been designed and outfitted as a multi-purpose and multi-discipline research ship. Besides two large permanent laboratories, the vessel carries four general purpose vans. Two of these vans are equipped as general purpose laboratories and two are for storage of research-related equipment. (Auth. mod.)

41-225
Ice navigation studies in the Alaskan Arctic using POLAR class icebreakers.
Brigham, L.W., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985—Proceedings—Vol.1, [1985], p.441-447.
Voelker, R.P.
Ice navigation, Ice conditions, Icebreakers, Drift, Design, Remote sensing, Marine transportation, Arctic Ocean.

41-226
Evolution and potential of the Arctic submarine.
McLaren, A.S., Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985—Proceedings—Vol.1, [1985], p.448-453. For another source see 40-329. 28 refs.
Subglacial navigation, Submarines, Marine transportation, Ice navigation, History, Arctic Ocean.

41-227
Non-resonant acoustic projector (NRAP) for low frequency studies.
Burke, S.P., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985—Proceedings—Vol.1, [1985], p.454-459, 4 refs.
Iddings, D.W., Anderson, J.O., Buck, B.M.
Acoustic measurement, Ice cover effect, Transmissivity, Design, Sound transmission, Measuring instruments, Underwater acoustics.

41-228
Acoustic noise measurements of icebergs.
Miller, J.D., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985—Proceedings—Vol.1, [1985], p.460-463, 2 refs.
Nazarenko, D., Noble, M.
Icebergs, Acoustic measurement, Ice detection, Ice conditions, Sound transmission, Noise (sound).

41-229
Acoustic array sensor tracking system.
Von der Heydt, K., et al, Ocean engineering and the environment—Oceans '85 Conference, San Diego, CA, Nov. 12-14, 1985—Proceedings—Vol.1, [1985], p.464-471, 10 refs.
Duckworth, G.L., Baggeroer, A.B.
Acoustic measurement, Geophysical surveys, Ice floes, Drift stations, Rheology, Measuring instruments, Oceanography.

41-230
Stability study of CRREL permafrost tunnel.
Huang, S.L., et al, *Journal of geotechnical engineering*, Aug. 1986, 112(8), p.777-790, 8 refs.
Aughenbaugh, N.B.
Permafrost heat balance, Permafrost thermal properties, Tunneling (excavation), Rheology, Soil temperature, Engineering, Soil creep, Soil stabilization, United States—Alaska.

41-231
River and lake ice engineering.
Ashton, G.D., ed, MP 2144, Littleton, CO, Water Resources Publications, 1986, 485p., Refs. passim.
River ice, Lake ice, Engineering, Ice physics, Ice mechanics, Ice models, Ice control, Icebreakers, Remote sensing, Thermal regime, Hydraulics, Ice nuclei.

41-232
Effects of road salt upon stream invertebrates.
Kersey, K., *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Aug. 1979, SIC-1, 12p. + append., 12 refs.
Chemical ice prevention, Road icing, Water pollution, Road maintenance, Winter maintenance, Salting, Streams.

41-233
Physics of snow and ice control on roads and highways.
Hanley, K., *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Aug. 1979, SIC-2, 15p., 17 refs.
Chemical ice prevention, Salting, Road icing, Ice melting, Snow melting, Meteorological factors, Topographic effects, Chemical properties, Abrasion, Winter maintenance.

41-234
Chlorides in the Don River watershed resulting from road de-icing salt.
Paine, R.L., *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Aug. 1979, SIC-3, 23p., 19 refs.
Chemical ice prevention, Water pollution, Rivers, Ice control, Snow removal, Ice removal, Environmental impact, Salting, Road icing.

41-235
Weather forecasting—a tool for winter snow and ice control on roads.
List, C., *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Aug. 1979, SIC-4, 20p., 9 refs.
Road icing, Weather forecasting, Ice control, Snow removal, Ice removal, Road maintenance, Winter maintenance.

41-236
Municipal decision making and the role of salt in snow and ice control in Ontario.
McBride, N., et al, *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Aug. 1979, SIC-5, 68p., Refs. p.66-68.
Needham, W., Peabody, C.
Salting, Chemical ice prevention, Road icing, Ice control, Snow removal, Ice removal, Winter maintenance, Road maintenance, Sands, Snowfall, Canada—Ontario.

41-237
Study of the sodium in private domestic wells in a selected area of York region.
Joy, M., *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Aug. 1979, SIC-6, 17p., 10 refs.
Chemical ice prevention, Water pollution, Wells, Salting, Road icing, Road maintenance, Winter maintenance, Countermeasures, Environmental impact.

41-238
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Fabricius, T., et al, *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Oct. 1980, SIC-7, 95p., 16 refs.
Whyte, A.
Salting, Road maintenance, Road icing, Chemical ice prevention, Ice control, Snow removal, Ice removal, Environmental protection, Snowfall, Canada—Ontario.

41-239
Legal implications of changing the application rates of salt on highways and sidewalks.
Adamache, M., et al, *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Nov. 1980, SIC-8, 51p.
Bickenbach, J.E.
Chemical ice prevention, Road maintenance, Winter maintenance, Salting, Sidewalks, Streets, Legislation.

41-240
Laboratory and field studies on the effects of road deicing salt on stream invertebrates.
Kersey, K., *Toronto. University. Institute for Environmental Studies. Snow and Ice Control Working Group. Working paper,* Feb. 1981, SIC-9, 21p., 29 refs.
Salting, Road icing, Environmental impact, Streams, Water pollution, Chemical ice prevention, Salinity, Winter maintenance.

41-241
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Aircraft icing, Ice detection.

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Low temperature tests, Transmission lines, Fibers.

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Features of the climate at Mawson Station, Antarctica.
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Climate, Antarctica—Mawson Station.
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Late Pleistocene sedimentation processes on the antarctic continental shelf off Cape Norvegia eastern Weddell Sea. [Spätpleistozäne Sedimentationsprozesse am antarktichen Kontinentalhang vor Kapp Norvegia, östliche Weddell See],
Grobe, H., *Berichte zur Polarforschung,* June 1986, No.27, 121p. + figs., In German with extended English summary. Refs. p.110-119.
Sediments, Drill core analysis, Geochemistry, Isotope analysis, Ice rafting, Sea ice, Clay minerals, Antarctica—Norvegia, Cape.
Sediment cores from nine sites along a profile on the antarctic continental margin off Kapp Norvegia were analyzed sedimentologically. The carbonate and organic carbon content, grain size distribution, composition of the coarse fraction and clay minerals were determined. *delta*O-18- and *delta*C-13-isotope ratios were also measured. The distribution of ice rafted debris was determined by a new method. Sedimentation-rates were obtained from Th-230 and C-14 analyses. (Auth.)

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Icebergs, Ice detection, Remote sensing, Radar echoes, Ocean waves, Wind factors, Models.

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Torgashev, P.I., ed, Zadorozhnyĭ, V.F., ed.
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41-277
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Foundations, Frost penetration, Rock fills, Clay soils, Frost heave, Earth fills, Saline soils.

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Fedorova, N.IA.
Foundations, Buildings, Discontinuous permafrost, Clay soils.

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Foundations, Frost heave, Plates, Buildings, Concrete structures, Prefabrication.

41-282
Foundationless low-rise buildings for structurally unstable ground. [O besfundamentnykh maloetazhnykh zdaniiakh dlia stroitel'stva na strukturno-neustoichivykh gruntakh],
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Clay soils, Foundations, Piles, Buildings, Freeze thaw cycles, Paludification.

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Using short pyramidal piles with intermediate sand-cushions in weak ground. [Opyt primeneniia korotkikh piramidal'nykh svai s promezhutochnoi peschanoi podushkoi v slabykh gruntakh],
Kugno, V.S., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.20-21, In Russian.
Nikitin, V.F.
Concrete piles, Foundations, Frost heave.

41-284
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Moiseichik, E.K., Problemy fundamentostroenii... na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.22-23, In Russian.
Piles, Seasonal freeze thaw, Frost penetration, Foundations, Earthwork.

41-285
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Torgashev, V.V.
Foundations, Piles, Frost heave.

41-286
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Elgin, B.B.
Foundations, Permafrost beneath structures, Discontinuous permafrost, Buildings, Frost heave.

41-287
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Vlasov, N.V., Babello, V.A.
Frost heave, Electric equipment, Foundations, Sands, Gravel, Water level.

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Buildings, Foundations, Bricks, Piles, Earth fills, Baykal Amur railroad, Frost heave.

41-289
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Baliura, M.V., Fursov, V.V.
Buildings, Foundations, Frost heave, Walls, Prefabrication, Bricks, Concrete structures, Seasonal freeze thaw.

41-290
Calculation of stresses in walls of unheated one-story buildings built on shallow foundations over frost-heaving ground. [K opredeleniiu usilii v stenakh neotaplivaemykh odnoetazhnykh zdanii na melkozaglublennykh fundamentakh pri moroznom puchenii osnovaniia],
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Tunnels, Foundations, Frost heave, Walls, Stresses, Buildings.

41-291
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Vaĭnberg, A.S., Tkachenko, IU.V.
Foundations, Freeze thaw cycles, Buildings, Settlement (structural).

41-292
One-story residential buildings with monolithic foundation plates built on weak fills and frost-heaving ground. [Odnoetazhnye zhilye zdania so sploshnymi fundamentnymi plitami na slabykh nasypnykh i puchinistykh gruntakh],
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Houses, Frost heave, Foundations, Concrete structures.

41-293
Designing foundations for different ground conditions. [K raschetu fundamentov v razlichnykh gruntovykh usloviiakh],
Trofimovich, N.V., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.39-41, In Russian.
Foundations, Plates, Permafrost beneath structures, Computer applications.

41-294
Shields designed to counteract frost heave. [Protivopuchinnye shchity],
Pchelintsev, A.M., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.41-42, In Russian.
Plates, Frost heave, Protective coatings, Construction materials, Concrete, Countermeasures, Plastics, Foundations.

41-295
Foundation construction in complex engineering-geological conditions in Finland. [Opyt stroitel'stva fundamentov v slozhnykh inzhenerno-geologicheskikh usloviiakh Finliandii],
Kushnir, I.N., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.42-43, In Russian.
Kari, A.
Houses, Earth fills, Rock fills, Foundations, Plates, Frost heave, Concrete, Drainage.

41-296
Protection of shallow foundations from flooding. [Zashchita malozaglublennykh fundamentov ot obvodneniia],
Kozlova, M.P., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.43-45, In Russian.
Buildings, Foundations, Basements, Flooding, Meltwater, Water level, Countermeasures.

41-297
Designing shallow foundations of low-rise buildings for frost heaving ground. [K raschetu melkozaglublennykh fundamentov maloetazhnykh zdanii na puchinistykh gruntakh],
Setova, N.B., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.45-46, In Russian.
Foundations, Frost heave, Design, Buildings.

41-298
Effective types of foundations for low-rise buildings on frost-heaving ground. [Effektivnye tipy fundamentov maloetazhnykh zdanii na puchinistykh gruntakh],
Zheleznlak, I.I., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.47, In Russian.
Buildings, Concrete structures, Foundations, Frost heave, Earth fills, Prefabrication.

41-299
Piles made of steel-fiber-concrete. [Svai s primeneniem stalefibrobetona],
Tupitsyna, V.N., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.48-49, In Russian.
Foundations, Concrete piles, Reinforced concretes, Permafrost beneath structures, Concrete structures.

41-300
Hard coatings for diminishing frost heaving and foundation deterioration. [Tverdye pokrytiia dlia umen'sheniia moroznogo vypuchivaniia i destrukts. fundamentov],
[Arkin, I.G., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.49-51, In Russian.
Pchelintsev, A.M., Fanshtein, E.A.
Protective coatings, Permafrost beneath structures, Foundations, Waterproofing, Frost heave, Concrete freezing, Frost resistance.

41-301
Calculating foundation stability for tangential forces of frost heave. [Raschet ustoichivosti fundamentov na vozdeistvie kasatel'nykh sil moroznogo pucheniia gruntov],
Elgin, B.B., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.52-53, In Russian.
Foundations, Soil freezing, Frost heave, Analysis (mathematics).

41-302
Allowing for the effect of seasonally thawing frost-heaving soil on foundations of structures built on slopes. [Uchet vozdeistviia sezonnoottaivaiushchikh puchinistykh gruntov na fundamenty sooruzhenii vozvodimykh na sklonakh],
Bondarenko, G.I., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.53-55, In Russian.
Solifluction, Slope processes, Permafrost depth, Frost heave, Embankments, Active layer, Ground thawing, Analysis (mathematics), Permafrost beneath structures.

41-303
Stresses and strains originating in structures near cracks. [Napriazhenno-deformirovannoe sostoianie stroitel'nykh konstruktsii v okrestnosti treshchin],
Terekhova, T.A., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.55-57, In Russian.
Cracks, Mathematical models, Foundations, Frost heave, Stress concentration.

41-304
Interaction of shallow foundations with underlying seasonally freezing layers. [Vzaimodeistvie melkozaglublennogo fundamenta s sezonno-promerzaiushchim sloem v ego osnovanii],
Fursov, V.V., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.57-59, In Russian.
Foundations, Soil freezing, Seasonal freeze thaw, Frost heave.

41-305
Designing low-load foundations of rural buildings in Transbaikal. [Opyt proektirovaniia malonagruzhennykh fundamentov sel'skikh zdanii v Zabaikal'e],
Makarov, A.P., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.59-61, In Russian.
Makarova, V.N.
Buildings, Building codes, Foundations, Soil freezing, Frost penetration, Seasonal freeze thaw.

41-306
Ways of increasing the service life of hydraulic structures within meliorative systems in frost-heaving ground. [Puti povysheniia dolgovechnosti setevykh gidrotekhnicheskikh sooruzhenii na meliorativnykh sistemakh v puchinistykh gruntakh],
Gavrilenko, V.I., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.61-63, In Russian.
Ivanov, V.N.
Frost heave, Land reclamation, Hydraulic structures, Soil water migration, Frost penetration.

41-307
Estimating the stability conditions for pile-foundation supports of high-voltage power lines in soils of the southern Far East. [Otsenka uslovii ustoichivosti svainykh fundamentov opor vysokovol'tnykh linii elektroperedach v gruntakh iuga Dal'nego Vostoka],
Tiurin, I.M., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.63-64, In Russian.
Power line supports, Foundations, Piles, Steel structures, Anchors, Reinforced concretes, Stability.

41-308
Frost heave as an indication of water regime in built-up areas. [Moroznoe puchenie kak faktor proiavleniia rezhima vlazhnosti gruntov zastroennykh territorii],
Fedorov, V.I., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.65-70, 1 ref., In Russian.
Frost heave, Soil freezing, Frost penetration, Soil water migration, Drainage.

41-309
Results of field observations of seasonal ground freezing dynamics. [Nekotorye rezul'taty naturnykh nabliudenii za dinamikoi sezonnogo promerzaniia gruntov],
Sazonov, G.M., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, Soil freezing, In Russian.
Frost penetration, Soil water migration, Frost heave, Seasonal freeze thaw.

41-310
Heaving pressure of ground freezing in a limited space. [K voprosu o davlenii pucheniia grunta promerzaiushchego v ogranichennom ob"eme],
Kim, V.Kh., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.73-74, In Russian.
Soil water, Frost penetration, Frost heave, Saturation, Measuring instruments.

41-311
Dynamics of the development of cryogenic processes and phenomena in the Central Transbaikal. [Dinamika razvitiia kriogennykh protsessov i iavlenii v Tsentral'nom Zabaikal'e],
Shesternev, D.M., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.74-76, In Russian.
Sebaochzhal, V.V., Chashchina, M.K.
Buildings, Solifluction, Rock streams, Foundations, Thermokarst, Permafrost beneath structures, Slope processes, Erosion, Geocryology.

41-312
Studying the possibility of estimating the frost heave of clayey grounds according to their swelling. [Issledovanie vozmozhnosti otsenki deformatsii moroznogo pucheniia glinistykh gruntov po ikh nabukhaniiu],
Orlov, V.O., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.76-78, In Russian.
Kostetskaia, E.V., Filippov, V.D.
Clay soils, Frost heave, Foundations, Engineering geology.

41-313
Frost heave of rocks in Central Transbaikal. [Puchenie porod v Tsentral'nom Zabaikal'e],
Shesternev, D.M., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.78-80, In Russian.
Plains, Alluvium, Frost heave, Sands, Clays.

41-314
Frost heave of ground under variable loading. [Puchenie grunta pod peremennoi nagruzkoi],
Orzhekhovskii, IU.R., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.80-82, In Russian.
Ganeles, L.B., Orzhekhovskaia, R.IA.
Soil freezing, Static loads, Frost penetration, Frost heave, Countermeasures, Soil compaction, Soil water migration, Analysis (mathematics).

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Water [illegible]nulation and frost heave in seasonally freezing ground. [Vlagonakoplenie i puchenie v sezonnopromerzaiushchikh gruntakh],
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Orzhekhovskii, IU.R., IUrganov, M.M.
Organic soils, Ice formation, Frost heave, Frost penetration, Soil water migration, Analysis (mathematics), Seasonal freeze thaw.

41-316
Studying the effect of seasonal changes in the humidity of thawed ground on its strength. [Issledovanie vliianiia sezonnogo izmeneniia vlazhnosti na prochnostnye kharakteristiki talogo grunta],
Vostretsov, O.K., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.84-85, In Russian.
Soil strength, Soil water migration, Seasonal variations.

41-317
Influence of suprapermafrost ground waters on the properties of seasonally thawing ground. [Vliianie nadmerzlotnykh gruntovykh vod na svoistva sezonnoottaivaiushchikh gruntov],
Pichuev, V.V., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.86-87, In Russian.
Permafrost hydrology, Active layer, Suprapermafrost ground water, Foundations, Permafrost beneath structures.

41-318
Compaction parameters of clastic-clayey grounds underlying low-rise buildings built on fills. [Parametry uplotneniia oblomochno-glinistykh gruntov pri stroitel'stve maloetazhnykh zdanii na podsypkakh],
Aminova, L.I., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.87-89, In Russian. 1 ref.
Foundations, Rock fills, Soil compaction, Frost heave, Buildings, Analysis (mathematics).

41-319
Development of frost heave deformations in freezing, coarsely clastic ground. [Osobennosti razvitiia deformatsii pucheniia v promerzaiushchikh krupnooblomochnykh gruntakh],
Petrova, M.A., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.89-91, In Russian.
Petrov, V.S.
Sands, Foundations, Gravel, Soil freezing, Hydrothermal processes, Frost heave, Ice formation.

41-320
Calculating foundation settlement during freeze-thaw. [Raschet osadok osnovanii pri promerzanii-ottaivanii],
Pyshchev, N.F., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.91-93, In Russian.
Buildings, Settlement (structural), Foundations, Frost heave, Freeze thaw cycles.

41-321
Calculating tangential frost-heaving forces of ground. [Otsenka kasatel'nykh sil moroznogo pucheniia gruntov],
Safronov, IU.V., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.93-95, In Russian.
Filippov, V.D., Musorin, A.V.
Foundations, Frost heave, Stresses, Analysis (mathematics).

41-322
Basic regularities governing the formation of a seasonally freezing rock layer in the southern Far East. [Osnovnye zakonomernosti formirovaniia sloia sezonnogo promerzaniia porod iuga Dal'nego Vostoka].
Bykova, V.I., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.95-97, In Russian.
Soil freezing, Frost penetration, Frost heave, Foundations, Buildings.

41-323
Increasing the accuracy of determining deformative characteristics of thawing ground. [O povyshenii dostovernosti opredeleniia deformativnykh kharakteristik ottaivaiushchikh gruntov].
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Foundations, Ground thawing, Buildings, Deformation, Tests, Laboratory techniques.

41-324
Compressive deformation of frozen saline soils. [Osobennosti kompressionnogo deformirovaniia merzlykh zasolennykh gruntov].
Kondakova, O.A., et al, Problemy fundamentostroenna na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.99-100, In Russian.
Shevchenko, L.V.
Saline soils, Rheology, Compressive properties, Frozen ground.

41-325
Distribution of stresses and strains in sandy bases of rigid stamps. [Raspredelenie napriazhenii i deformatsii v peschanom osnovanii zhestkikh shtampov].
Krivorotov, A.P., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.100-103, In Russian.
Rats, P.P., Krutasova, L.V., Babello, V.A.
Sands, Compressive properties, Test equipment, Laboratory techniques.

41-326
Peculiarities and regularities governing the behavior of frost-susceptible soils in different landscapes affected by industrial activities. [Osobennosti i zakonomernosti povedeniia morozoopasnykh gruntov pri tekhnogennom vozdeistvii v raznykh landshaftnykh usloviiakh].
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Mudrov, IU.V.
Human factors, Permafrost origin, Soil air interface, Permafrost transformation, Heat transfer.

41-327
Measuring instruments IPG-3 and IDMG-1 for frost heaving of ground. [Otsenka moroznoi puchinistosti gruntov priborami IPG-3 i IDMG-1].
Lapshin, V.IA., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.105, In Russian.
Syrokomskii, IU.V.
Foundations, Frost heave, Buildings, Deformations, Measuring instruments.

41-328
Laboratory technique of determining frost heave coefficient. [Laboratornoe opredelenie puchinistosti gruntov].
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Orzhekhovskii, IU.R.
Soil freezing, Frost penetration, Frost heave, Measuring instruments, Laboratory techniques.

41-329
Field methods of estimating frost heave properties of grounds. [Polevye metody otsenki puchinistykh svoistv promerzaiushchikh gruntov].
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Izmailova, O.V.
Foundations, Frost heave, Deformation.

41-330
Studying frost heave in Chita City. [Issledovaniia moroznogo pucheniia v g. Chite].
Ivin, I.A., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.110, In Russian.
Soil freezing, Hydrothermal processes, Frost penetration, Frost heave.

41-331
Studying tangential forces of frost heave under laboratory conditions. [Ob otsenke kasatel'nykh sil pucheniia v laboratornykh usloviiakh].
Musorin, A.V., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.111, In Russian.
Soil freezing, Frost heave, Test equipment, Laboratory techniques.

41-332
Computerized forecasting of cryogenic processes. [Ispol'zovanie EVM dlia prognoza kriogennykh protsessov].
Sozoniuk, V.V., Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.112, In Russian.
Buildings, Permafrost beneath structures, Frost heave, Computer applications.

41-333
Studying temperature regime of floor surfaces in residential buildings on slab foundations. [Issledovanie temperaturnogo rezhima poverkhnosti polov v zhilykh pomeshcheniiakh zdanii na sploshnykh fundamentnykh plitakh].
Rudykh, O.I., et al, Problemy fundamentostroeniia na puchinistykh gruntakh (sbornik tezisov dokladov i soobshchenii k predstoiashchei konferentsii) (Foundation construction on frost heaving ground (collection of summaries of papers and reports to be presented at the regional conference "Effective foundations for low-rise buildings on frost heaving ground in the Far East and Transbaikal, Chita, Nov. 21-22, 1985)), Chita, 1985, p.113-114, In Russian.
Rudykh, L.N., Grigor'ev, P.IA.
Foundations, Residential buildings, Floors, Permafrost beneath structures, Thermal regime.

41-334
Snowdrift models.
Irwin, P.A., et al, *Northern engineer*, Fall 1985, 17(3), p.4-11, 6 refs.
Williams, C.J.
Snowdrifts, Snow accumulation, Snow mechanics, Wind tunnels, Models, Tests.

41-335
Plastic foam—from frost protection to road embankments.
Refsdal, G., *Northern engineer*, Fall 1985, 17(3), p.16-19, 5 refs.
Frost protection, Embankments, Thermal insulation, Cellular plastics, Pavements, Resins, Construction materials, Roads.

41-336
House for a cold city.
Ross, J.F., *Northern engineer*, Fall 1985, 17(3), p.20-24.
Houses, Thermal insulation, Cold weather construction, Heat balance, Heating, Ventilation.

41-337
Sea ice and the Fairway Rock icefoot.
Kovacs, A., et al, *Northern engineer*, Fall 1985, 17(3), MP 2145, p.25-32, 18 refs.
Sodhi, D.S., Cox, G.F.N.
Ice loads, Offshore structures, Drift, Offshore landforms, Ice pressure, Ice mechanics, Sea ice, Ice cover thickness, Pressure ridges, Bering Strait.
The information obtained in this study revealed that a massive icefoot appears to form around Fairway Rock each winter. This icefoot is the result of ice impinging against the island, failing, and subsequently piling up, forming ridges up to 15 m high. The icefoot varies from less than 10 m to over 100 m wide. The slope of the inner ridges averages 33 degrees while the slope of the outer face of the icefoot can exceed 70 degrees. This is apparently the result of nongrounded ice rubble having slumped or been cleaved off. The instructive findings are, as anticipated, that ice rubble formation around a large structure placed in "deep" water will not extend appreciably beyond the width of the structure, and therefore will not add significantly to its effective diameter. In order for this to be so, the submarine slope needs to be relatively steep. At Fairway Rock, it is reasonable to assume that the shallowest submarine slope was at or near the angle of repose of the rock talus.

41-338
Cold region structural engineering.
Eranti, E., et al, New York, McGraw-Hill Book Co., 1986, 529p., Refs. p.502-518.
Lee, G.C.
Cold weather construction, Snow cover, Ice cover, Permafrost, Snow loads, Icing, Ice physics, Ice loads, Frost heave, Construction materials, Snow removal, Ice control, Offshore structures.

41-339
Arctic water pollution research: applications of science and technology.
International Conference on Arctic Water Pollution Research: Applications of Science and Technology, Yellowknife, N.W.T., 1985, *Water science and technology*, 1986, 18(2), 193p., Refs. passim. For selected papers see 41-340 through 41-353.
Bridgeo, W.A., ed, Eisenhauer, H.R., ed.
Water pollution, Waste disposal, Oil spills, Impurities, Chemical analysis, Meetings, Ice cover effect, Microbiology, Dispersions.

41-340
Biological accumulation and monitoring of chemical wastes in arctic waters.
Perkins, E.J., *Water science and technology*, 1986, 18(2), p.1-11, Refs. p.9-11.
Waste disposal, Water pollution, Meltwater, Chemical analysis, Snowmelt, Ice melting, Marine biology, Arctic Ocean.

41-341
Behaviour and fate of arctic oil spills.
Bobra, A.M., et al, *Water science and technology*, 1986, 18(2), p.13-23, 12 refs.
Fingas, M.F.
Oil spills, Ice cover effect, Dispersions, Water pollution, Chemical analysis, Physical properties, Liquid solid interfaces, Beaufort Sea.

41-342
Random transport of oil by sea ice.
Colony, R., *Water science and technology*, 1986, 18(2), p.25-39, 13 refs.
Oil spills, Ice cover effect, Dispersions, Sea ice, Mathematical models, Distribution, United States—Alaska—Prudhoe Bay, United States—Alaska—Peard Bay.

41-343
Oil in ice computer simulation model.
Wotherspoon, P.D., et al, *Water science and technology*, 1986, 18(2), p.41-46, 4 refs.
Swiss, J.J.
Oil spills, Computer applications, Ice cover effect, Floating ice, Ocean currents, Ice bottom surface, Distribution, Water pollution, Mathematical models, Sea ice.

41-344
Accumulation of airborne trace pollutants by arctic plants and soil.
Thomas, W., *Water science and technology*, 1986, 18(2), p.47-57, 21 refs.
Soil pollution, Vegetation, Air pollution, Mosses, Lichens, Plants (botany), Chemical composition, Sampling, Norway—Spitsbergen.

41-345
Fate of petroleum pollutants in Arctic ecosystems.
Atlas, R.M., *Water science and technology*, 1986, 18(2), p.59-67, Refs. p.64-67.
Oil spills, Soil pollution, Tundra, Water pollution, Ecosystems, Microbiology, Marine biology, Decomposition.

41-346
Acid neutralizing capacity of glacial sediments in western Ungava.
Wilson, H., et al, *Water science and technology*, 1986, 18(2), p.69-85, 33 refs.
Bouchard, M.A., Delisle, C.E.
Glacial deposits, Ecosystems, Mineralogy, Chemical analysis, Precipitation (meteorology), Sediments, Canada—Quebec—Ungava.

41-347
Coastal ecology and the Arctic oil industry: some elements for future oil-spill contingency planning.
Sendstad, E., *Water science and technology*, 1986, 18(2), p.87-96, 21 refs.
Oil spills, Ice cover effect, Water pollution, Marine biology, Shores, Countermeasures, Ecology, Oil recovery.

41-348
Air chemistry observations in the Canadian Arctic.
Hoff, R.M., et al, *Water science and technology*, 1986, 18(2), p.97-107, 17 refs.
Barrie, L.A.
Air pollution, Haze, Aerosols, Chemical analysis, Seasonal variations, Water pollution, Canada.

41-349
Microbial aspects of the Inuvik sewage lagoon.
Henry, J.G., et al, *Water science and technology*, 1986, 18(2), p.117-128, 15 refs.
Prasad, D.
Sewage treatment, Microbiology, Water pollution, Sludges, Temperature effects, Seasonal variations, Bacteria, Ponds, Canada—Northwest Territories—Inuvik.

41-350
Lagoon treatment of municipal sewage effluent in a subarctic region of Canada (Yellowknife, N.W.T.).
Soniassy, R.N., et al, *Water science and technology*, 1986, 18(2), p.129-139, 8 refs.
Lemon, R.
Sewage treatment, Waste treatment, Water treatment, Ice cover effect, Permafrost preservation, Climatic factors, Chemical analysis, Microbiology, Frozen ground, Canada—Northwest Territories—Yellowknife.

41-351
Concentration of impurities during melting of snow made from secondary sewage effluent.
Zapf-Gilje, R., et al, *Water science and technology*, 1986, 18(2), p.151-156, 6 refs.
Russell, S.O., Mavinic, D.S.
Sewage treatment, Waste disposal, Meltwater, Snow impurities, Freeze thaw cycles, Artificial snow, Artificial freezing.

41-352
Background levels of petroleum residues in the Canadian Arctic marine environment.
Levy, E.M., *Water science and technology*, 1986, 18(2), p.161-169, 17 refs.
Water pollution, Oil spills, Bottom sediment, Ocean bottom, Ocean environments, Sampling, Freeze drying, Ice edge, Arctic Ocean.

41-353
Impact of a scientific conference—conference summary.
Bridgeo, W.A., *Water science and technology*, 1986, 18(2), p.185-190, 1 ref.
Water pollution, Ice cover effect, Oil spills, Waste disposal, Freeze thaw cycles, Environmental impact, Meetings, Chemical analysis, Marine biology.

41-354
Proceedings.
OMAE Specialty Symposium on Offshore and Arctic Frontiers, 1st, New Orleans, LA, Feb. 23-27, 1986, New York, American Society of Mechanical Engineers, 1986, 492p., Refs. passim. For selected papers see 41-355 through 41-361., Presented at the 9th annual Energy-Sources Technology Conference and Exhibition, New Orleans, LA, Feb. 23-27, 1986.
Salama, M.M., ed.
DLC TC1665.043 1986
Offshore structures, Offshore drilling, Ice loads, Engineering, Ice pressure, Design, Ocean bottom, Soil strength, Meetings.

41-355
Yield curve of pack ice (1): physical meaning.
Ito, H., OMAE Specialty Symposium on Offshore and Arctic Frontiers, 1st, New Orleans, LA, Feb. 23-27, 1986. Proceedings. Edited by M.M. Salama, New York, American Society of Mechanical Engineers, 1986, p.105-109, 13 refs.
Pack ice, Ice plasticity, Ice mechanics, Ice physics, Ice models, Floating ice, Analysis (mathematics).

41-356
Yield curve of pack ice (2): general shape.
Ito, H., OMAE Specialty Symposium on Offshore and Arctic Frontiers, 1st, New Orleans, LA, Feb. 23-27, 1986. Proceedings. Edited by M.M. Salama, New York, American Society of Mechanical Engineers, 1986, p.111-117, 3 refs.
Pack ice, Ice plasticity, Ice strength, Ice crack, Ice cover thickness, Stresses.

41-357
Development of 690 MPa yield strength steel plates for arctic offshore structures.
Okano, S., et al, OMAE Specialty Symposium on Offshore and Arctic Frontiers, 1st, New Orleans, LA, Feb. 23-27, 1986. Proceedings. Edited by M.M. Salama, New York, American Society of Mechanical Engineers, 1986, p.119-126, 7 refs.
Offshore structures, Steel structures, Tensile properties, Temperature effects, Plates, Caissons, Chemical analysis.

41-358
Analysis of gravity platform foundations using F.E.M. with stochastic materials.
Hoddinott, T., et al, OMAE Specialty Symposium on Offshore and Arctic Frontiers, 1st, New Orleans, LA, Feb. 23-27, 1986. Proceedings. Edited by M.M. Salama, New York, American Society of Mechanical Engineers, 1986, p.127-135, 21 refs.
Arockiasamy, M., Munaswamy, K., Swamidas, A.S.J.
Soil strength, Offshore structures, Foundations, Ice loads, Stresses, Settlement (structural), Dislocation (materials), Ocean waves, Wind factors, Construction materials, Models, Analysis (mathematics).

41-359
Laboratory soil testing for design of arctic offshore structures.
Saada, A.S., et al, OMAE Specialty Symposium on Offshore and Arctic Frontiers, 1st, New Orleans, LA, Feb. 23-27, 1986. Proceedings. Edited by M.M. Salama, New York, American Society of Mechanical Engineers, 1986, p.137-149, 11 refs.
Funegard, E.G., Puccini, P.M.
Offshore structures, Soil strength, Ocean bottom, Stresses, Ice loads, Wind factors, Earthquakes, Tests, Design.

41-360
Corrosion control of steel reinforcement in offshore concrete structures.
Jensen, F.O., OMAE Specialty Symposium on Offshore and Arctic Frontiers, 1st, New Orleans, LA, Feb. 23-27, 1986. Proceedings. Edited by M.M. Salama, New York, American Society of Mechanical Engineers, 1986, p.405-413, 13 refs.
Offshore structures, Corrosion, Steels, Freeze thaw cycles, Reinforced concretes, Concrete structures, Countermeasures, Ice solid interface, Water temperature, Decomposition, Sea water, Water chemistry.

41-361
Caisson drilling and completion system.
Hewlett, C., OMAE Specialty Symposium on Offshore and Arctic Frontiers, 1st, New Orleans, LA, Feb. 23-27, 1986. Proceedings. Edited by M.M. Salama, New York, American Society of Mechanical Engineers, 1986, p.459-468.
Offshore drilling, Ice loads, Offshore structures, Ice scoring, Caissons, Pressure ridges, Icebergs, Design, Environmental impact.

41-362
Sea ice breakup and tidal flats processes, Frobisher Bay, Baffin Island.
McCann, S.B., et al, *Physical geography*, Apr.-June 1986, 7(2), p.168-180, 5 refs.
Dale, J.E.
Sea ice, Ice breakup, Ice rafting, Shoreline modification, Sediment transport, Canada—Northwest Territories—Baffin Island.

41-363
Alaska snow surveys and Federal-State-Private cooperative snow surveys, Mar. 1, Apr. 1, May 1 and June 1, 1986.
Clagett, G.P., U.S. Dept. of Agriculture, Soil Conservation Service, 1986, 4 issues.
Snow surveys, Snow depth, Snow water content, Stream flow, Snow accumulation, Snowfall, Forecasting, Statistical analysis, Meteorological data, United States—Alaska.

41-364
Institute of Northern Engineering, 1985-1986 report.
Alaska, University, Institute of Northern Engineering, [1986], 48p.
Engineering, Frost heave, Snow physics, Permafrost, Transportation, Runoff, Marine deposits, Marine biology, Forestry, Research projects, United States—Alaska.

41-365
Proceedings.
Gas Hydrates, Arctic/Offshore Research, and Deep Source Gas Contractors Review Meeting, Morgantown, WV, Mar. 25-26, 1986, Morgantown, WV, U.S. Dept. of Energy, Morgantown Energy Technology Center, July 1986, 241p., Refs. passim. For selected papers see 41-366 through 41-369.
Komar, C.A., ed.
Hydrates, Offshore structures, Ice mechanics, Subsea permafrost, Sea ice, Meetings, Soil temperature, Research projects, Design.

41-366
Overview: Arctic and offshore research.
Shoemaker, H.D., Gas Hydrates, Arctic/Offshore Research, and Deep Source Gas Contractors Review Meeting, Morgantown, WV, Mar. 25-26, 1986. Proceedings. Edited by C.A. Komar, Morgantown, WV, U.S. Dept. of Energy, Morgantown Energy Technology Center, July 1986, p.59-62.
Ice loads, Petroleum industry, Hydrates, Research projects, Sea ice, Offshore structures, Design, Offshore drilling, Oil spills, Ice islands, Icing.

41-367
Development of quantitative information on Arctic sea ice and ice island movement, thickness, and mechanical properties: ice island production and movement.
Sackinger, W.M., et al, Gas Hydrates, Arctic/Offshore Research, and Deep Source Gas Contractors Review Meeting, Morgantown, WV, Mar. 25-26, 1986. Proceedings. Edited by C.A. Komar, Morgantown, WV, U.S. Dept. of Energy, Morgantown Energy Technology Center, July 1986, p.63-80, Refs. p.78-80.
Ice islands, Sea ice, Ice mechanics, Ice cover thickness, Remote sensing, Mechanical properties, Offshore structures, Climatic factors, Ice cores.

41-368
Development of quantitative information on Arctic sea ice and ice island movement, thickness, and mechanical properties: adhesion and physical properties of naturally formed sea spray ice.
Sackinger, W.M., et al, Gas Hydrates, Arctic/Offshore Research, and Deep Source Gas Contractors Review Meeting, Morgantown, WV, Mar. 25-26, 1986. Proceedings. Edited by C.A. Komar, Morgantown, WV, U.S. Dept. of Energy, Morgantown Energy Technology Center, July 1986, p.81-89, 2 refs.
Ship icing, Sea spray, Ice adhesion, Ice physics, Ice cover thickness, Sea ice, Superstructures, Measuring instruments.

41-369
Monitoring seasonal changes in seafloor temperature and salinity.
Sellmann, P.V., et al, MP 2147, Gas Hydrates, Arctic/Offshore Research, and Deep Source Gas Contractors Review Meeting, Morgantown, WV, Mar. 25-26, 1986. Proceedings. Edited by C.A. Komar, Morgantown, WV, U.S. Dept. of Energy, Morgantown Energy Technology Center, July 1986, p.110-114.
Reimnitz, E.
Subsea permafrost, Permafrost thermal properties, Sea water, Water temperature, Water chemistry, Salinity, Seasonal variations, Measuring instruments, Beaufort Sea.

41-370
From frost to gelifluction: a new approach based on micromorphology its applications to Arctic environment.
Van Vliet-Lanoë, B., *Inter-Nord*, 1985, No.17, p.15-20, With French summary. 46 refs.
Ice lenses, Periglacial processes, Cryoturbation, Microstructure, Fossils, Freeze thaw cycles, Frost heave, Soil creep, Frost action.

41-371
Biogeographic evolution of a moraine sector in Svalbard (Glacier Loven Central), quantitative balance 1978-1981. [Évolution biogéographique d'un secteur de moraine au Svalbard (Glacier Loven Central) bilan quantitatif 1978-1981].
Brossard, T., *Inter-Nord*, 1985, No.17, p.33-46, In French with English summary. 8 refs.
Biogeography, Moraines, Vegetation, Plants (botany), Statistical analysis, Norway—Svalbard.

41-372
Structure and floristic composition of a high Arctic tundra: Ny Ålesund (Svalbard Archipelago).
Nimis, P.L., *Inter-Nord*, 1985, No.17, p.47-58, With French summary. 26 refs.
Tundra, Vegetation, Plant physiology, Classification, Landscapes, Norway—Svalbard.

41-373
Change of vegetation near the timber-line.
Armand, A.D., *Inter-Nord*, 1985, No.17, p.59-62, With French summary. 6 refs.
Vegetation, Ecosystems, Climatic factors, Forest lines, Mountains, Altitude, USSR—Siberia, USSR—Caucasus.

41-374
Slopes and scree of northwest Greenland: general study and observations compared with the mechanical erosion on the Moon and on Mars. [Pentes et éboulis nord-ouest groenlandais: étude générale et observations comparées avec l'érosion mécanique sur la Lune et Mars (I)].
Malaurie, J., *Inter-Nord*, 1985, No.17, p.63-79, In French with English summary. 36 refs.
Soil erosion, Slope processes, Geomorphology, Talus, Frost action, Planetary environments, Mars (planet), Water content, Celestial bodies, Greenland.

41-375
Types of evolution and slope dynamics in North Labrador. [Types d'évolution et de dynamique des versants dans le socle nord-labradorien],
André, M.F., *Inter-Nord*, 1985, No.17, p.81-94, In French with English summary. 12 refs.
Slope processes, Periglacial processes, Geomorphology, Mountains, Canada—Newfoundland—Labrador.

41-376
Comparison study of climate between sandur and tundra regions by three types of weather. [Étude comparée du climat d'un sandur et d'une toundra selon trois ambiances climatiques],
Joly, D., *Inter-Nord*, 1985, No.17, p.95-101, In French with English summary. 10 refs.
Tundra, Soil temperature, Outwash, Climatic factors, Climatology, Thermal properties.

41-377
Designing for automotive corrosion prevention. Society of Automotive Engineers. Proceedings, SAE/P-78/78, Nov. 8-10, 1978, Troy, MI, Nov. 1978, 132p., Refs. passim. For selected papers see 41-378 through 41-381.
Corrosion, Vehicles, Salting, Environmental impact, Chemical ice prevention, Countermeasures, Road maintenance, Winter maintenance.

41-378
Winter maintenance practice and research in Ontario.
Fromm, H.J., Designing for automotive corrosion prevention. Society of Automotive Engineers. Proceedings, SAE/P-78/78, Nov. 8-10, 1978, Troy, MI, Nov. 1978, p.1-4, 7 refs.
Winter maintenance, Road maintenance, Corrosion, Vehicles, Chemical ice prevention, Salting, Road icing, Environmental protection, Snowfall, Canada—Ontario.

41-379
Selection and use of de-icing chemicals and abrasives in North America and overseas.
Keyser, J.H., Designing for automotive corrosion prevention. Society of Automotive Engineers. Proceedings, SAE/P-78/78, Nov. 8-10, 1978, Troy, MI, Nov. 1978, p.5-13, 44 refs.
Salting, Chemistry, Road icing, Chemical ice prevention, Environmental impact, Snow removal, Ice removal, Corrosion, Countermeasures, Abrasion, Vegetation.

41-380
Chemistry of the automotive environment.
Baboian, R., Designing for automotive corrosion prevention. Society of Automotive Engineers. Proceedings, SAE/P-78/78, Nov. 8-10, 1978, Troy, MI, Nov. 1978, p.14-23, 30 refs.
Chemical ice prevention, Corrosion, Vehicles, Chemistry, Environmental impact, Salting, Chemical analysis, Precipitation (meteorology), Rain, Humidity.

41-381
Salting practices—trends and issues.
Swets, D.H., Designing for automotive corrosion prevention. Society of Automotive Engineers. Proceedings, SAE/P-78/78, Nov. 8-10, 1978, Troy, MI, Nov. 1978, p.128-132, 15 refs.
Salting, Corrosion, Vehicles, Chemical ice prevention, Road maintenance, Winter maintenance, Environmental impact, Snow removal, Ice removal, Streets.

41-382
Planned New Zealand antarctic activities for 1986-1987.
New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Christchurch, 1986, 26p.
Research projects, Expeditions, Logistics, Antarctica.
The 1986-1987 plan is submitted in accord with provisions of Article VIII, par. 5 of the Antarctic Treaty and Consultative Party Recommendations I-VI, III-IV, and IV-XIX. It is composed of 13 individual items + 9p. of data on telecommunications equipment and schedules. The individual items give details of ships and aircraft to be used; aircraft operations to, from, and in Antarctica; bases to be utilized and their OICs; participating personnel by occupational specialty; military personnel participating, armaments possessed; scientific disciplines pursued w/projects at bases and in the field and responsible agencies; facilities available for rendering assistance; foreign *(vis à vis* New Zealand) nations' antarctic expeditions organized in or proceeding from New Zealand; unoccupied refuges; statistics on indigenous birds and mammals killed or captured; and use of radionuclides.

41-383
New Zealand antarctic research programme: report on reductions, extensions and other modifications to the 1985/86 programme.
New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Christchurch, 1986, 4 leaves.
Research projects, Expeditions, Logistics, Antarctica.
The report is made in accordance with the Antarctic Treaty Consultative Party Recommendations I-IV and IV-XIX. It announces program reductions, extensions, and personnel schedules. Antarctic Division staff was reduced by three; Ross Sea environment studies, penguin studies, and the historic huts restoration project were only partially completed due to ice conditions. A granite rocks mapping project was deleted; two vehicles were withdrawn from service; a British-Norwegian expedition was postponed; and seal kill was reduced. One helicopter was added as was one RNZAF flight Christchurch to McMurdo. The OIC at Scott Base was announced; additional personnel for that base were listed by job specialty; and one oversnow vehicle was added. Five pages of RNZAF and Army personnel schedules were included.

41-384
Winter Service Congress, 1985. [Winterdienst-Kongress 1985],
Winterdienst-Kongress 1985: Ökologische und Ökonomische Optimierung des Strassenwinterdienstes, Murau, Austria, Jan. 29-31, 1985, *Forschungsgesellschaft für das Verkehrs- und Strassenwesen. Schriftenreihe*, 1985, No.82, 68p., In German. Refs. passim. For selected papers see 41-385 through 41-391.
Road maintenance, Winter maintenance, Road icing, Salting, Snow removal, Ice removal, Plant ecology, Economic analysis, Meetings, Environmental impact.

41-385
Ecological factors in the winter service. [Ökologische orientierter Winterdienst],
Dedić, O., *Forschungsgesellschaft für das Verkehrs- und Strassenwesen. Schriftenreihe*, 1985, No.82, p.11-16, 6 refs., In German.
Winter maintenance, Road maintenance, Salting, Plant ecology, Environmental impact, Snow removal, Ice removal, Chemical ice prevention, Vegetation.

41-386
Winter service in Steiermark, Austria. [Winterdienst in der Steiermark],
Dirnböck, G., *Forschungsgesellschaft für das Verkehrs- und Strassenwesen. Schriftenreihe*, 1985, No.82, p.17-21, In German.
Winter maintenance, Road maintenance, Salting, Snow removal, Ice removal, Cost analysis, Austria—Steiermark.

41-387
Winter service on main-street network in Slovenia. [Winterdienst am Primärstrassennetz der Sozialistischen Republik Slowenien],
Ocvirk, R., *Forschungsgesellschaft für das Verkehrs- und Strassenwesen. Schriftenreihe*, 1985, No.82, p.31-35, 4 refs., In German.
Winter maintenance, Road maintenance, Road icing, Snow removal, Ice removal, Ice prevention, Ice control, Climatic factors, Salting, Sanding.

41-388
Winter service on the municipal highways. [Winterdienst auf Stadtautobahnen],
Sauer, A., *Forschungsgesellschaft für das Verkehrs- und Strassenwesen. Schriftenreihe*, 1985, No.82, p.37-40, In German.
Road icing, Winter maintenance, Road maintenance, Ice control, Ice removal, Ice forecasting, Countermeasures, Warning systems.

41-389
Optimization of the winter service in Rheinland-Pfalz. [Optimierung des Winterdienstes in Rheinland-Pfalz],
Rude, B.J., *Forschungsgesellschaft für das Verkehrs- und Strassenwesen. Schriftenreihe*, 1985, No.82, p.41-46, 4 refs., In German.
Road icing, Snow removal, Ice removal, Winter maintenance, Salting, Chemical ice prevention, Ice control, Road maintenance.

41-390
Development and use of a new melting agent. [Entwicklung und Anwendung eines neuen Auftaumittels],
Washüttl, J., *Forschungsgesellschaft für das Verkehrs- und Strassenwesen. Schriftenreihe*, 1985, No.82, p.49-57, 4 refs., In German.
Chemical ice prevention, Road icing, Environmental impact, Soil pollution, Snow removal, Ice removal, Chemical analysis, Vegetation, Damage.

41-391
Problem of the resistance of concrete surfaces to salting. [Probleme der Tausalzbeständigkeit von Betonoberflächen].
Stehno, G., *Forschungsgesellschaft für das Verkehrs- und Strassenwesen Schriftenreihe*, 1985, No.82, p.59-63, 2 refs., In German
Salting, Concrete pavements, Concrete durability, Freeze thaw cycles, Chemical ice prevention, Snow melting, Ice melting, Frost resistance.

41-392
Application of natural sludge dewatering at small sewage treatment plants in Finland.
Puolanne, J., Characterization, treatment and use of sewage sludge Proceedings of the 2nd European Symposium, Vienna, Oct. 21-23, 1980. Edited by P. L'Hermite and H. Ott, Dordrecht, Holland, D. Reidel Publishing Co., 1981, p.107-117, 4 refs.
Sewage treatment, Drying, Sludges, Freeze thaw cycles, Water treatment, Climatic effects, Finland.

41-393
On free convection melting of a solid immersed in a hot dissimilar fluid.
Chen, M.M., et al, *International journal of heat and mass transfer*, Aug. 1986, 29(8), p.1087-1093, With French, German and Russian summaries. 6 refs.
Farhadieh, R., Baker, L., Jr.
Ice melting, Salt water, Convection, Liquid solid interfaces, Temperature effects, Analysis (mathematics), Phase transformations.

41-394
Analysis of melting around a moving heat source.
Moallemi, M.K., et al, *International journal of heat and mass transfer*, Aug. 1986, 29(8), p.1271-1282, With French, German and Russian summaries. 20 refs.
Viskanta, R.
Melting, Heat sources, Liquid solid interfaces, Phase transformations, Temperature effects, Mathematical models, Surface temperature, Velocity, Machanical properties.

41-395
Lattice vibrations and infrared absorption of ice Ih.
Marchi, M., et al, *Journal of chemical physics*, Sep. 1, 1986, 85(5), p.2414-2418, 29 refs.
Tse, J.S., Klein, M.L.
Ice physics, Ice models, Molecular structure, Ice crystal replicas, Ice optics, Density (mass/volume), Analysis (mathematics), Neutron scattering, Infrared reconnaissance.

41-396
Freezing of liquid-saturated porous media.
Weaver, J.A., et al, *Journal of heat transfer*, Aug. 1986, 108(3), p.654-659, 16 refs.
Viskanta, R.
Freezing, Porous materials, Liquid solid interfaces, Freeze thaw cycles, Soil freezing, Ground thawing, Artificial freezing, Mathematical models, Saturation, Experimentation, Heat transfer.

41-397
Seasonal variation of chlorophyll-*a* in fast ice at Davis, Antarctica.
Lü, P., China (People's Republic). South Pole Scientific Expedition. [Papers]. Vol.3, Beijing, Oceanic Publications Society, 1986, p.11-19, In Chinese with English summary. 19 refs.
Photosynthesis, Fast ice, Ice composition, Sea ice, Ice cover effect, Ice cover thickness, Biomass, Chlorophylls, Antarctica—Davis Station.
Chlorophylla, pheophytin, salinity, nutrients and pH were determinated in the water and fast ice at Davis Station, from Mar. to Dec. 1982. Two peaks of chlorophyll-*a* content in the fast ice were determined, in both spring and autumn, ranging from 0.26 mg/cu.m to 81.69 mg/cu.m. Chlorophylla content in water was 0.03-13.94 mg/cu.m. The thickness of sea ice reached its highest value of 1.94 m in Dec., the color of the layer under it was green in autumn and brown in spring. The causes of the seasonal variation of color are discussed. (Auth. mod.)

41-398
Measurement and investigation of primary production of the inshore water near Davis, Antarctica.
Lü, P., et al, China (People's Republic). South Pole Scientific Expedition. [Papers]. Vol.3, Beijing, Oceanic Publications Society, 1986, p.38-43, In Chinese with English summary. 14 refs.
Perrin, R.
Fast ice, Biomass, Antarctica—Davis Station.
The primary production in inshore water and fast ice near Davis Station was measured, using dark-light bottle method, from May to Dec. 1982. The gross production and the net production in the water ranged from -0.07 to 1.86 gC/cu.m/day and 0.11 to 1.74 gC/cu.m/day, respectively. The highest values were recorded in Nov., and the lowest in May and August. Gross production and net production in the fast ice ranged from -0.09 to 0.35 gC/cu.m/day and -0.06 to 1.44 gC/cu.m/day, respectively. Between Oct. and Dec., both the gross and the net production were higher in the fast ice than in the inshore water. (Auth. mod.)

41-399
Some ecological observations on antarctic ice algae.
Zhang, K., et al, China (People's Republic). South Pole Scientific Expedition. [Papers]. Vol.3, Beijing, Oceanic Publications Society, 1986, p.49-59, In Chinese with English summary. 16 refs.
Lü, P.
Algae, Sea ice, Ice cover thickness, Ice cover effect, Photosynthesis, Antarctica—Davis Station.
Ecological observations, made in the nearshore of Davis Station from Mar. to Dec. 1982, show that ice algae growth has an obvious seasonal variation, with a high growth rate in Nov. Some environmental factors affecting growth, such as thickness, structure and nature of the ice layer, light, temperature, salinity, nutrients and pH in the ice algae layer and the stability of the water under the sea ice, are discussed. Light intensity and water stability under the sea ice are considered to be the main factors affecting the growth of ice algae. The role of ice algae in marine ecosystem is discussed.

41-400
Formation of the ice algae layer in antarctic sea ice.
Zhang, K., et al, China (People's Republic). South Pole Scientific Expedition. [Papers]. Vol.3, Beijing, Oceanic Publications Society, 1986, p.60-65, In Chinese with English summary. 7 refs.
Lü, P.
Colored ice, Sea ice, Algae, Antarctica—Davis Station.
Observations of the ice algae layer, conducted at the inshore water of Davis Station from Mar. to Dec., 1982, show that the color layer of sea ice results from the growth of ice algae. The physical and biological processes and probable mechanism of the formation of ice algae layer are discussed. Three patterns of ice algae layer were found, and analyses were carried out of their environmental conditions, including temperature, salinity, pH, nutrients and light. (Auth. mod.)

41-401
Ice algae in sea ice near Davis Station, Antarctica.
Yu, J., et al, China (People's Republic). South Pole Scientific Expedition. [Papers]. Vol.3, Beijing, Oceanic Publications Society, 1986, p.66-71, In Chinese with English summary. 10 refs.
Zhang, K., Li, R.
Sea ice, Algae, Cryobiology, Antarctica—Davis Station.
Results from analyses carried out on ice samples from Davis Station, from Apr. to Dec. 1982, are reported. Eighty two species of ice algae are identified, including 72 species and varieties of diatoms, 5 species of dinoflagellates and 1 species of silicoflagellate. The communities are dominated by pennate diatoms. The monthly mean cell number of ice algae was 48,000 cells/l. The annual variation of cell number shows 2 peaks, with maximum values in Nov. and minimum in Apr. Results obtained from cell counting agree with those from chlorophyll-*a* determination. The cell number in ice samples was much higher than in water samples. It is thought that sunshine and light intensity in sea ice induce proliferation of ice algae. (Auth. mod.)

41-402
One dominant species of diatom communities found in the sea ice near Davis Station, Antarctica.
Zhang, K., et al, China (People's Republic). South Pole Scientific Expedition. [Papers]. Vol.3, Beijing, Oceanic Publications Society, 1986, p.72-75, In Chinese with English summary. 7 refs.
Yu, J.
Sea ice, Algae, Antarctica—Davis Station.
It is reported that the species of pennate diatoms, *Fragilaria oceanica*, was found to be dominant in the ice algal communities of the antarctic sea ice near Davis Station in Apr.-Sep. 1982. (Auth. mod.)

41-403
Identification of phytoplankton pigments in inshore water near Davis Station, Antarctica.
Li, B., et al, China (People's Republic). South Pole Scientific Expedition. [Papers]. Vol.3, Beijing, Oceanic Publications Society, 1986, p.110-115, In Chinese with English summary. 6 refs.
Zhang, K.
Sea ice, Algae, Plankton, Ice composition, Antarctica—Davis Station.
Identification of phytoplankton pigments, in sea ice and sea water near Davis Station, was conducted from Jan. 1982 to Jan. 1983 by thin-layer chromotography. Eight kinds of algal pigments were identified from the samples of sea ice in Mar. to Nov. 1982. They were: carotenoids, chlorophyll-*a*, *b*, and *c*, phaeophytin, chlorophyllids and some derivatives form chlorophyll-*c*. Seven kinds of algal pigments were also found in the samples of sea water in May 1982 to Jan. 1983. They were: carotenoids, chlorophyll-*a*, phaeophytin, chlorophyllids, chlorophyll-*c*, and its derivatives. The pigment constituent of phytoplankton had an obvious seasonal variation both in the sea ice and wea water. Some remarkable differences of algal pigment constitutent between the sea ice and sea water was found. (Auth. mod.)

41-404
Significance of nanoplankton in the inshore water at Davis, Antarctica.
Mao, X., et al, China (People's Republic). South Pole Scientific Expedition. [Papers]. Vol.3, Beijing, Oceanic Publications Society, 1986, p.130-135, In Chinese with English summary. 11 refs.
Lü, P.
Cryobiology, Plankton, Sea ice, Fast ice, Algae, Antarctica—Davis Station.
Nanoplankton in sea water made up 51% of total chlorophyll-*a* content and amounted to 43% of total cell number, in the fast ice, nanoplankton made up 47% of total chlorophyll-*a* content, and accounted for 51% of total cell number. Seasonal variation of nanoplankton chlorophyll-*a* and cell number was not found in sea water, but it was found in phytoplankton sampled by net, with highest values in Nov. and Dec. 1982, and in Jan. 1983. Seasonal variation of the standing crop of nanoplankton and phytoplankton was found in the sea ice. There were two peaks for chlorophyll-*a* and cell number, one in May, the other in Nov. The dominant species of nanoplankton in the sea water and fast ice were small diatom, small flagellates and silicious flagellates. (Auth. mod.)

41-405
Proposed code provisions for drifted snow loads.
O'Rourke, M., et al, *Journal of structural engineering*, Sep. 1986, 112(9), MP 2148, p.2080-2092, 7 refs.
Tobiasson, W., Wood, E.
Snow loads, Roofs, Snowdrifts, Snow accumulation, Statistical analysis, Forecasting.
Current code provisions for drift snow loads on multilevel roofs are examined in light of recent research results from a statistical study of approximately 350 drift load case histories. New provisions are proposed in which the design drift load is a function of the length of the upper-level roof and the 50-yr mean recurrence interval ground snow load. It is felt that these new proposed provisions result in a design drift load with a mean recurrence interval of about 50 yrs.

41-406
Corps of Engineers Land Treatment Research and Development program.
Iskandar, I.K., MP 2149, Technology Transfer Opportunities for the Construction Engineering Community [Conference]. Environment Session, Denver, CO, Feb. 25-27, 1986. Proceedings, [1986], p.17-18.
Water treatment, Land reclamation, Soil freezing, Municipal engineering.

41-407
Heat distribution research.
Phetteplace, G., MP 2150, Technology Transfer Opportunities for the Construction Engineering Community [Conference]. Energy Session, Denver, CO, Feb. 25-27, 1986. Proceedings, [1986], p.2-3, 1 ref.
Heat transfer, Frozen ground thermodynamics, Water pipes, Heat loss, Heating, Soil temperature, Distribution, Design.

41-408
Water-source heat pumps.
Phetteplace, G., MP 2151, Technology Transfer Opportunities for the Construction Engineering Community [Conference]. Energy Session, Denver, Co, Feb. 25-27, 1986. Proceedings, [1986], p.14-15, 6 refs.
Water pipes, Pumps, Heating, Heat transfer, Water temperature, Freezing points.

41-409
Effect of cold weather on productivity.
Abele, G., MP 2152, Technology Transfer Opportunities for the Construction Engineering Community [Conference]. Construction seminar, Denver, CO., Feb. 25-27, 1986. Proceedings, [1986], p.61-66, 15 refs.
Cold weather construction, Cold weather performance, Cold stress, Cold weather tests, Equipment, Snowfall, Wind factors, Temperature effects.

41-410
Megastructures for mobilization.
Flanders, S.N., MP 2153, Technology Transfer Opportunities for the Construction Engineering Community [Conference]. Mobilizattion Readiness and Logistics Session, Denver, CO, Feb. 25-27, 1986. Proceedings, [1986], p.10-11.
Military facilities, Buildings, Logistics, Structures, Time factor.

41-411
Surface features of Ice Stream B, Marie Byrd Land, West Antarctica.
Vornberger, P.L., et al, *Annals of glaciology*, 1986, Vol.8, p.168-170, 9 refs.
Whillans, I.M.
Ice sheets, Stream flow, Rheology, Ice surface, Ice melting, Snowdrifts, Crevasses, Stresses, Antarctica—Marie Byrd Land.

Aerial photographs have been obtained of Ice Stream B, one of the active ice streams draining the West Antarctic Ice Sheet. A sketch map made from these photographs shows two tributaries. The margin of the active ice is marked by curved crevasses and intense crevassing occurs just inward of them. Transverse crevasses dominate the center of the ice streams and diagonal types appear at the lower end. A "suture zone" originates at the tributary convergence and longitudinal surface ridges occur at the downglacier end. The causes of these surface features are discussed and the relative importance of four stresses in resisting the driving stress is assessed. It is concluded that basal drag may be important, longitudinal compression is probably important at the lower end, and longitudinal tension is probably most important near the head of the ice stream. Side drag leads to shearing at the margins, but does not restrain much of the ice stream. (Auth.)

41-412
Surface velocity determination on large polar glaciers by aerial photogrammetry.
Brecher, H.H., *Annals of glaciology*, 1986, Vol.8, p.22-26, 7 refs.
Glacier flow, Aerial surveys, Velocity measurement, Glacier surveys, Mapping, Antarctica—Byrd Glacier.
Aerial photogrammetric block triangulation, a standard and well-developed technique for extending accurate control for mapping into the interior of a region from a few points of known position on its perimeter, can be readily adapted to determine surface velocities on bodies of ice which are too large, and often too crevassed, to be studied effectively by conventional ground surveying. Velocities are calculated from the changes in positions of the same natural surface features determined from photography of two (or more) epochs and the elapsed time. This method is capable of providing many uniformly-spaced measurements over the whole, moving, ice surface, thus allowing the production of maps of velocity and strain-rate, which are valuable in analyzing the ice-flow regime. Results from measurements completed some years ago on Byrd Glacier, one of the largest outlet glaciers from the East Antarctic plateau, are presented as an example of what the method can yield. By means of Doppler satellite surveying, relative positons of control points for each photography epoch can be determined with sub-meter accuracy, making the technique suitable also in regions where no fixed land features exist. A brief description of a project under way in such an area, on Ice Stream B in West Antarctica, is given. (Auth.)

41-413
Concretes for high dams. [Betony dlia vysokikh plotin],
Sudakov, V.B., ed, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.187, 101p., In Russian. For selected papers see 41-414 through 41-419. Refs. passim.
Boravskaia, E.N., ed, Leĭbovich, A.S., ed.
Hydraulic structures, Dams, Concrete structures, Spillways, Winter concreting, Concrete admixtures, Surfactants, Air entrainment.

41-414
Methods of estimating the efficiency of new surface-active additives. [O metodike otsenki effektivnosti novykh dobavok PAV],
Sudakov, V.B., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.187, p.3-9, In Russian. 4 refs.
Ginzburg, Ts.G., Morozova, G.V.
Concretes, Frost resistance, Concrete admixtures, Surfactants, Air entrainment, Concrete strength.

41-415
New air-entrainment and plastifying admixture for concretes. [Novaia vozdukhovovlekaiushche-plastifitsiruiushchaia dobavka dlia betonov],
Berger, T.F., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.187, p.9-13, In Russian. 8 refs.
Winter concreting, Concrete admixtures, Surfactants, Air entrainment, Frost resistance.

41-416
Concretes with polyfunctional admixtures. [Betony s dobavkami polifunktsional'nogo deĭstviia],
Sudakov, V.B., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.187, p.13-17, In Russian. 14 refs.
Ginzburg, Ts.G., Morozova, G.V., Kostyria, G.Z.
Concrete admixtures, Frost resistance, Air entrainment, Concrete retarders, Cements, Winter concreting.

41-417
Frost resistance of concretes and their structure. [Morozostoĭkost' betonov i ikh struktura],
Bel', A.A., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.187, p.36-38, In Russian. 6 refs.
Concrete admixtures, Winter concreting, Frost resistance.

41-418
Allowing for freezing temperature when assigning the type of concrete according to its frost resistance in the zone of variable water level. [Uchet temperatury zamorazhivaniia pri naznachenii marok betona po morozostoĭkosti v zone peremennogo urovnia vody],
Kargin, G.M., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.187, p.44-49, In Russian. 6 refs.
Concrete freezing, Freeze thaw cycles, Winter concreting, Cooling rate, Concrete strength, Classifications.

41-419
Concretes with complex admixtures for the Sayano-Shushenskaya dam. [Betony Saiano-Shushenskoĭ GES s kompleksnymi dobavkami],
Ginzburg, Ts.G., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.187, p.71-73, In Russian. 6 refs.
Karysheva, V.A., Churakova, O.M.
Hydraulic structures, Concrete admixtures, Surfactants, Winter concreting.

41-420
Hydrology of the Baykal Amur Railroad area. [Voprosy gidrologii BAMa],
Dobroumov, B.M., ed, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.312, 135p., In Russian. For selected papers see 41-421 through 41-425. Refs. passim.
River flow, Icebound rivers, Permafrost beneath rivers, Ice cover thickness, Permafrost hydrology, Subglacial drainage, Drainage, Human factors.

41-421
Possible changes in river drainage in permafrost zones when the ground water regime is disturbed. [Vozmozhnye izmeneniia rechnogo stoka pri narushenii rezhima podzemnykh vod v raĭonakh mnogoletneĭ merzloty],
Sokolov, B.L., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.312, p.3-11, In Russian. 25 refs.
Human factors, Permafrost beneath rivers, River flow, Permafrost hydrology, Drainage, Natural resources, Water reserves, River water.

41-422
Ice cover and winter runoff of rivers in the eastern part of the BAM zone. [Ledianoĭ pokrov i zimniĭ stok rek vostochnoĭ chasti zony BAMa],
Sokolov, B.L., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.312, p.11-33, In Russian. 9 refs.
Liubimov, G.A.
River basins, Permafrost beneath rivers, Permafrost hydrology, Icebound rivers, Ice cover thickness, Subglacial drainage.

41-423
Role of naleds in the formation of river winter drainage and ice cover in the western BAM zone. [Rol' naledei v formirovanii zimnego rechnogo stoka i ledianogo pokrova rek zapadnoi chasti zony BAMa],
Kravchenko, V.V., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.312, p.34-84, In Russian. 14 refs.
River flow, Ice formation, Ice cover thickness, Permafrost beneath rivers, Naleds, Permafrost hydrology, Drainage.

41-424
Influence of economic activities on river water resources and regime in the BAM zone. [Nekotorye aspekty vliianiia khoziaĭstvennoĭ deiatel'nosti na vodnye resursy i rezhim rek zony BAMa],
Dobroumov, B.M., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.312, p.84-93, In Russian.
Permafrost hydrology, Permafrost beneath rivers, Drainage, Human factors.

41-425
Results of studying soils and ground in the central BAM area. [Rezul'taty issledovaniĭ pochvogruntov v tsentral'nom raĭone trassy BAM],
Vasilenko, N.G., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.312, p.104-118, In Russian. 6 refs.
Khersonskiĭ, E.S.
Solifluction, Permafrost distribution, River basins, Permafrost beneath rivers, Mountain soils, Taiga, Cryogenic soils, Soil formation, Slope processes, Soil composition.

41-426
Increasing the safety of energy-producing structures under dynamic loading. [Povyshenie nadezhnosti energeticheskikh sooruzheniĭ pri dinamicheskikh vozdeĭstviiakh],
Shelmin, I.S., ed, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.184, 113p., In Russian. For the selected paper see 41-427. 9 refs.
Boravskaia, E.N., ed, Leĭbovich, A.S., ed.
Concrete structures, Models, Concrete admixtures, Frost resistance, Construction materials.

41-427
Use of modified siloxane compositions in small-scale modeling of dynamic phenomena in power engineering structures. [Primenenie modifitsirovannykh siloksannovykh kompositsiĭ pri malomashshtabnom modelirovanii dinamicheskikh iavleniĭ v energosooruzheniiakh],
Samsonova, T.I., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.184, p.7-13, In Russian. 9 refs.
Concrete admixtures, Frost resistance, Models, Concrete structures, Construction materials.

41-428
State of stress and thermal stresses in concretes and reinforced concretes of hydraulic structures. [Napriazhennoe i termonapriazhennoe sostoianie betonnykh i zhelezobetonnykh konstruktsiĭ gidrotekhnicheskikh sooruzheniĭ],
Karavaev, A.V., ed, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.180, 104p., In Russian. For selected papers see 41-429 and 41-430. Refs. passim.
Boravskaia, E.N., ed, Leĭbovich, A.S., ed.
Ice jams, Hydraulic structures, Ice pressure, Concrete structures, Tunnels, Permafrost thermal properties, Floods, Excavation.

41-429
Temperature regime of rocks surrounding underground excavations of the Kolyma Hydroelectric Power Plant. [Temperaturnyĭ rezhim skal'nogo massiva vokrug podzemnykh vyrabotok na Kolymskoĭ GES],
Kuznetsov, V.S., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.180, p.26-29, In Russian.
Altunin, IU.S., IUrovskiĭ, M.G.
Hydraulic structures, Permafrost thermal properties, Tunnels, Electric power, Thermal regime.

41-430
Flood water stresses on the protective hydraulic structures of Leningrad. [Issledovanie napriazhennogo sostoianiia vodopropusknogo sooruzheniia v komplekse zashchity g. Leningrada ot navodneniĭ],
Konstantinova, R.G., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.180, p.88-91, In Russian. 1 ref.
Tatarnikova, E.G., Tatarnikova, T.G.
Hydraulic structures, Ice pressure, Floods, Ice jams.

41-431
Waterproofing and corrosion prevention in hydraulic structures. [Gidroizoliatsiia i antikorrozionnaia zashchita gidrosooruzheniĭ],
Shchavelev, N.F., ed, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.183, 100p., In Russian. For selected papers see 41-432 through 41-434. Refs. passim.
Galina, A.A., ed, Bovicheva, T.M., ed.
Hydraulic structures, Earth dams, Steel structures, Waterproofing, Corrosion, Frost action, Spillways, Coatings, Linings, Construction materials.

41-432
Stresses in impervious screens induced by waves and adhered ice. [Analiz napriazhennogo sostoianiia protivofil'tratsionnykh ekranov pri vozdeĭstvii voln i primerzshego l'da],
Stabnikov, N.V., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.183, p.33-38, In Russian. 7 refs.
Bakhvalova, T.IU.
Ice loads, Hydraulic structures, Waterproofing, Water waves, Frost action.

41-433
Field studies of the polymer cavitation-resistant coatings of the Bratsk dam spillway. [Naturnye issledovaniia polimernykh kavitatsionnostoĭkikh pokrytiĭ na vodoslive Bratskoĭ GES],
Dymant, A.N., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1985, Vol.183, p.58-63, In Russian. 2 refs.
Polymers, Hydraulic structures, Spillways, Coatings, Linings, Frost action, Construction materials.

41-434
Corrosion resistance of steel cores of earth dams and ways of its improvement. [Korrozionnaia dolgovechnost' stal'nykh diafragm gruntovykh plotin i sposoby ee povysheniia],
Kuznetsov, V.S., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1985, Vol.183, p.63-68, In Russian. 9 refs.
Semenova, N.I.
Hydraulic structures, Frost action, Earth dams, Steel structures, Corrosion.

41-435
Arctic runs of the Balts. [Arkticheskie reisy baltiitsev],
Kotliarskii, M., *Morskoi flot*, 1986, No.5, p.12-13, In Russian.
Icebreakers, Ice navigation, Ice breaking, Ships, Arctic Ocean.

41-436
Icebreakers: fuel economy and safe navigation. [Ledokoly: ekonomiia topliva i bezopasnost' plavaniia],
Berezniĭ, V., *Morskoĭ flot*, 1986, No.5, p.35-36, In Russian.
Diesel engines, Sea ice distribution, Ice conditions, Ice navigation, Icebreakers, Fuels.

41-437
Radioactive isotope method of controlling earth density during roadbed construction. [Radioizotopnyi kontrol' plotnosti grunta pri sooruzhenii zemlianogo polotna],
Kurochkin, V.V., *Transportnoe stroitel'stvo*, July 1986, No.7, p.11-12, In Russian.
Roadbeds, Radioactive isotopes, Earthwork, Earth fills, Measuring instruments.

41-438
Mobile hydraulic crane KMTTS-10. [Mobil'nyi gidrokran KMTTS-10],
Vil'ner, A.D., *Transportnoe stroitel'stvo*, July 1986, No.7, p.37-38, In Russian.
Cranes (hoists), Frost action, Construction equipment, Cold weather performance.

41-439
Trial construction of 20-m span ice dome.
Kokawa, T., et al, *Seppyo*, June 1986, 48(2), p.67-73, In Japanese with English summary. 7 refs.
Murakami, K.
Ice (construction material), Ice creep, Loads (forces), Cold weather construction, Snow (construction material), Tests, Buildings.

41-440
Hydraulic conveying of snow. 7. Energy loss of snow/water mixture flow combining at a T-junction of pipes.
Shirakashi, M., et al, *Seppyo*, June 1986, 48(2), p.75-82, In Japanese with English summary. 8 refs.
Hydraulics, Liquid solid interfaces, Water pipelines, Snow mechanics, Water flow, Flow rate, Pressure.

41-441
Net craning-up method for snow removal.
Muramatsu, K., *Seppyo*, June 1986, 48(2), p.83-85, In Japanese. 4 refs.
Snow removal, Road icing, Snow accumulation, Equipment.

41-442
On the powder snow avalanche, which occurred in Maseguchi, Nou-machi, Niigata Prefecture, 1986.
Kobayashi, S., *Seppyo*, June 1986, 48(2), p.87-91, In Japanese. 4 refs.
Avalanche formation, Snow accumulation, Snow mechanics, Snow crystals, Damage.

41-443
Reports of several international and domestic symposia.
Kurida, T., et al, *Seppyo*, June 1986, 48(2), p.93-112, In Japanese.
Goto, K.
Snow physics, Ice physics, Research projects, Meetings, Snow structure, Ice pressure, Supercooled clouds, Snowflakes.

41-444
Ice engineering laboratory, Nippon Kohan K.K. *Seppyo*, June 1986, 48(2), p.113-115, In Japanese.
Ice physics, Engineering, Laboratories.

41-445
Monte Carlo simulation of snow depth in a forest.
Woo, M.-K., et al, *Water resources research*, June 1986, 22(6), p.864-868, 7 refs.
Steer, P.
Snow depth, Forest canopy, Snow cover distribution, Vegetation factors, Computer applications.

41-446
Determining the effectiveness of a navigable ice boom.
Perham, R.E., *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1985, SR 85-17, 28p., ADA-162 926, 19 refs.
Ice navigation, Ice booms, River ice, Ice control, Ice cover thickness, Ice porosity.
The performance of a navigable ice boom was studied by monitoring the progression of the leading edge of the unconsolidated ice cover over a reach of the St. Marys River directly downstream of the boom. Ice and hydraulic data were obtained for four winters from 1975-76 through 1978-79 for the St. Marys River at Sault Ste. Marie, Michigan. The ice cover progression rate was highest in early winter. The unconsolidated ice cover in the channel was estimated to have a thickness of at least 0.91 m and a porosity of 30%. During early winter the ice discharge per vessel passage averaged approximately 5500 cu m for the four years. Model tests for this site had indicated that without an ice control structure of any type, an ice release of 63,000 cu m per ship passage could be expected, with an ice boom the release would be 12,300 cu m per ship passage.

41-447
Model studies of surface noise interference in ground-probing radar.
Arcone, S.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1985, CR 85-19, 23p., ADA-163 208, 12 refs.
Delaney, A.J.
Radar echoes, Noise (sound), Polarization (waves), Countermeasures, Electrical properties, Antennas, Tests, Models.
Ground-probing radar can be an effective tool for exploring the top 10 to 20 m of ground, especially in cold regions where the freezing of water decreases signal absorption. However, the large electrical variability of the surface, combined with the short wavelengths used, can often cause severe ground clutter that can mask a desired, deeper return. In this study a model facility was constructed consisting of a metallic reflector covered by sand. Troughs of saturated sand were emplaced at the surface to vary surface electrical properties and to act as a noise source to interfere with the bottom reflections. Antenna polarization and height, and signal stacking in both static (antennas stationary) and dynamic (antennas moving) modes were then investigated as methods for reducing the surface clutter. Polarization parallel to the profile direction (perpendicular to the troughs' axes) gave profiles superior to the perpendicular case because of the directional sensitivity of the antenna radiation.

41-448
Watershed management in the eighties; proceedings.
Watershed Management Symposium, Denver, CO, Apr. 29-May 3, 1985, New York, American Society of Civil Engineers, 1985, 317p., Refs. passim. For selected papers see 41-449 through 41-453.
Jones, E.B., ed, Ward, T.J.
Watersheds, Snow water equivalent, Snow hydrology, Forest canopy, Runoff forecasting, Snow depth, Snow accumulation, Frozen ground, Soil water, Meetings.

41-449
Predicting forest snow water equivalent.
Bergman, J.A., Watershed Management Symposium, Denver, CO, Apr. 29-May 3, 1985. Proceedings. Edited by E.B. Jones and T.J. Ward. Watershed Management in the eighties, New York, American Society of Civil Engineers, 1985, p.154-162, 5 refs.
Snow water equivalent, Forest canopy, Snow depth, Snow accumulation, Water supply, Runoff forecasting, Mountains, United States—California—Sierra Nevada.

41-450
Streamflow generation from subalpine forests.
Troendle, C.A., Watershed Management Symposium, Denver, CO, Apr. 29-May 3, 1985. Proceedings. Edited by E.B. Jones and T.J. Ward. Watershed Management in the eighties, New York, American Society of Civil Engineers, 1985, p.240-247, 8 refs.
Stream flow, Water balance, Forest canopy, Snowmelt, Watersheds, Snow water equivalent, Water table, Models, Rain, Slopes, Hydrography, Alpine landscapes.

41-451
Simulation of airborne snow water equivalent measurement errors made over a forested watershed.
Vogel, R.M., et al, Watershed Management Symposium, Denver, CO, Apr. 29-May 3, 1985. Proceedings. Edited by E.B. Jones and T.J. Ward. Watershed Management in the eighties, New York, American Society of Civil Engineers, 1985, p.248-255, 8 refs.
Carroll, T.R., Carroll, S.S.
Snow water equivalent, Forest canopy, Snow hydrology, Accuracy, Airborne equipment, Solar radiation, Snow depth.

41-452
Snow management practices for increasing soil water reserves in frozen prairie soils.
Gray, D.M., et al, Watershed Management Symposium, Denver, CO, Apr. 29-May 3, 1985. Proceedings. Edited by E.B. Jones and T.J. Ward. Watershed Management in the eighties, New York, American Society of Civil Engineers, 1985, p.256-263, 9 refs.
Granger, R.J.
Snow accumulation, Soil water, Frozen ground, Snow depth, Snow water equivalent, Freeze thaw cycles, Meadow soils, Meltwater, Seepage.

41-453
Snow management at ski areas: hydrologic effects.
Kattelmann, R., Watershed Management Symposium, Denver, CO, Apr. 29-May 3, 1985. Proceedings. Edited by E.B. Jones and T.J. Ward. Watershed Management in the eighties, New York, American Society of Civil Engineers, 1985, p.264-272, 21 refs.
Snow water equivalent, Snow hydrology, Watersheds, Runoff, Snow compaction, Mountains, Soil erosion, Sedimentation, Slope protection, Skis, Avalanche engineering.

41-454
Helicopter Icing Spray System (HISS) evaluation and improvements.
Belte, D., et al, *U.S. Army Aviation Engineering Flight Activity. USAAEFA project*, Apr. 1986, No.82-05-3, 148p., ADA-170 732, 20 refs.
Woratschek, R.
Aircraft icing, Ice accretion, Cloud physics, Spray freezing, Helicopters, Evaporation, Supercooled clouds, Tests.

41-455
Determining the elasticity modulus and viscosity coefficient of ice cover from investigation data obtained under semi-natural conditions. [Opredelenie modulia uprugosti i koeffitsienta viazkosti ledianogo pokrova po dannym issledovaniĭ v polunaturnykh usloviiakh],
IAkunin, A.E., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1986, No.3, p.124-128, In Russian. 6 refs.
Ice models, Artificial ice, Ice cover strength, Rheology, Physical properties.

41-456
Human activities impact on the biological activity of mountain soils. [Vliianie antropogennoĭ nagruzki na biologicheskuiu aktivnost' gornykh pochv],
Aseeva, I.V., et al, *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie*, Apr.-June 1986, No.2, p.41-45, In Russian with English summary. 8 refs.
Efremov, A.L., Gorcharuk, L.C.
Mountain soils, Soil microbiology, Human factors, Soil chemistry, Forestry, Alpine landscapes, Soil erosion, Grazing.

41-457
Frost bulb with or without groundwater flow on a buried chilled Alaskan pipe.
Perera, W.G., American Control Conference. Proceedings, Vol.3, 1984, [New York, Institute of Electrical and Electronics Engineers], 1984, p.1850-1855, IEEE Catalog No. 84CH2024-8, 14 refs.
DLC TJ 212.2.A48 1984
Frost heave, Ground water, Water flow, Pipelines, Heat balance.

41-458
Biogenic-silica accumulation in the Ross Sea and the importance of antarctic continental-shelf deposits in the marine silica budget.
Ledford-Hoffman, P.A., et al, *Geochimica et cosmochimica acta*, Sep. 1986, 50(9), p.2099-2110, Refs. p.2108-2110.
DeMaster, D.J., Nittrauer, C.A.
Sea water, Water chemistry, Sediments, Antarctica—Ross Sea.
Thirty-five box cores were collected from the continental shelf in the Ross Sea during cruises in January and February, 1983. Pb-210 and Pu-239,240 geochronologies coupled with biogenic-silica measurements were used to calculate accumulation rates of biogenic silica. Sediment in the southern Ross Sea accumulation rates were calculated with the highest values occurring in the southwestern part. If biogenic-silica accumulation in the southern Ross Sea continental shelf is typical of other basins on the Antarctic continental shelf, as much as 1.2X10 sup14 g/y of silica could be accumulating in these deposits. Biogenic-silica accumulation on the Antarctic continental shelf may account for as much as a fourth of the dissolved silica supplied to the world ocean by rivers and hydrothermal vents. (Auth. mod.)

41-459
Ice-core drilling site at Law Dome summit, Wilkes Land, Antarctica.
Hamley, T.C., et al, *Australian National Antarctic Research expeditions. ANARE research notes,* Sep. 1986, No.37, 34p., 39 refs.
Morgan, V.I., Thwaites, R.J., Gao, X.Q.
Ice cores, Site surveys, Topographic surveys, Antarctica—Budd Coast.
Two intermediate depth, thermally drilled ice cores (382 m and 474 m) and two shallow ice cores (both 30 m) have been obtained from the Law Dome summit region. It is now proposed to drill a deep ice core to bedrock for scientific analysis. This report outlines the investigations which have been undertaken in the region so far and the rationale for selecting a drilling site with a view to obtaining the best possible scientific data. Detailed bedrock and surface topographic surveys have been conducted over an area of 100 sq km (with 1 km grid spacing) centered on A001 at Law Dome summit. These surveys, in conjunction with a knowledge of surface snow accumulation rates, physical properties revealed by the analysis of earlier ice cores, and factors affecting the scientific analysis of the future ice core, are discussed. A drill-site is proposed, approximately 4.3 km due west of A001, situated over a local bedrock depression. The approximate coordinates of the drill-site are 66.7S, 112.7E, elevation 1360 m. The ice thickness at this location is 1260 m. (Auth.)

41-460
Reports of the U.S. - U.S.S.R. Weddell Polynya Expedition, October-November 1981 Vol.8: collected reprints.
Ackley, S.F., ed, *U.S. Army Cold Regions Research and Engineering Laboratory,* 1986, SP 86-06, 158p., ADA-169 346, Refs. passim. Individual papers are also found at 28-1818-19; 29-307; 37-3958-63; 38-9, 1817, 1820, 2917, 4422; 39-310, 1826-27, 3554, 3640 and/or B-28322-33, 30298, 30537; F-28320-21, 28535, 29232, 29745, 30514, 31987; G-30348; I-29231, 31885; J-28315-19, 29229-30, 30517, 31240.
Murphy, D.R., ed.
Sea water, Water chemistry, Sea ice, Polynyas, Plankton, Boundary layer.
The expedition was a multidisciplinary effort with research components in physical oceanography, chemical oceanography, marine biology, atmospheric sciences and sea ice studies. General background on the expedition and its participants is given in the two articles in the *Introduction* section. The first seven reports of this series were primarily data reports and cruise logs of the various components: analyses of the data are given in the papers in this report. These 25 articles represent a fairly broad range of scientific and general interest literature, with publications in eight different journals. It is believed that a single collection of the published journal articles, commonly linked by the data collected on the Weddell Polynya Expedition, would be a convenience to those who participated in the program and possibly of value to other researchers. (Auth. mod.)

41-461
Impulse radar sounding of level first-year sea ice from an icebreaker.
Martinson, C.R., *U.S. Army Cold Regions Research and Engineering Laboratory,* Nov. 1985, SR 85-21, 9p., ADA-163 229, 2 refs.
Ice cover thickness, Sea ice, Radar echoes, Sounding, Icebreakers.
During the last weeks of May 1984, a CRREL impulse radar system was used onboard the RV *Polarstern* to measure the thickness of level first-year sea ice. The purpose was to determine the onboard performance of the radar system and, if possible, provide ice thickness information to researchers conducting other tests. Radar data were compared with ice thicknesses determined by drilling, indicating that radar soundings could be a viable means of collecting ice thickness information. A lack of adequate coordination between the two measurement methods prevented a point-by-point comparison of ice thicknesses; the comparisons were based on averages for particular test runs. The differences of the averages from the two measuring methods ranged from 0.03 m to 0.22 m with a mean variation in the differences of 0.13 m for eight runs. There may have been some interference from the ship's hull during data collection because of the location of the antenna. However, an unidentified signal in some of the data does not appear to obscure a valid return from the bottom of the ice sheet.

41-462
Mine detection using non-sinusoidal radar. Part I: Spatial analysis of laboratory test data.
Dean, A.M., Jr., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1984, SR 84-22, 99p., ADA-150 471, 8 refs.
Martinson, C.R.
Military research, Cold weather tests, Mines (ordnance), Radar echoes, Countermeasures, Ground thawing.
The interaction among UHF radiation, winter roadway conditions and buried mines was investigated in a refrigerated facility. The near-field spatial return from each target was unique. When the target was not in the near field the spatial return was not at all unique. Cobbles in the medium had little effect, but surface-thawed conditions significantly affected the spatial return, and the reflected signal strength and frequency content. The primary frequency content of the returned signal was either spread over a band broader than that of the transmitted primary frequencies, or completely outside of the primary detection band. We conclude that the complexity of winter roadway conditions requires 1) a much broader frequency band than is currently being considered, and 2) a more complex and adaptive background-removal, signal-enhancement scheme than is currently used. Further, more data are required describing the interaction of the winter media, UHF radiation, and buried mines so that adequate detection instrumentation can be developed.

41-463
[Proceedings].
International Heat Transfer Conference, 6th, Toronto, Canada, Aug. 7-11, 1978, Washington, D.C., Hemisphere Publishing Corporation, 1978, Vols. 1, 2 and 3, Refs. passim. For selected papers see 41-464 through 41-470.
Heat transfer, Pipes (tubes), Mass transfer, Melting, Freezing, Ice formation, Meetings, Liquid solid interfaces, Laminar flow.

41-464
Maximum density effects on forced laminar convection in horizontal water pipes with near freezing wall temperature.
Cheng, K.C., et al, International Heat Transfer Conference, 6th, Toronto, Canada, Aug. 7-11, 1978. Proceedings, Washington, D.C., Hemisphere Publishing Corporation, 1978, p.67-72, 12 refs.
Ou, J.-W.
Water pipes, Freezing points, Laminar flow, Convection, Density (mass/volume), Walls, Temperature effects, Analysis (mathematics), Velocity.

41-465
Simultaneous heat and mass transfer in soil with application to waste heat utilization.
Shapiro, H.N., et al, International Heat Transfer Conference, 6th, Toronto, Canada, Aug. 7-11, 1978. Proceedings, Washington, D.C., Hemisphere Publishing Corporation, 1978, p.19-24, 17 refs.
Moran, M.J.
Heat transfer, Mass transfer, Waste treatment, Underground pipelines, Soil temperature, Analysis (mathematics), Heating.

41-466
Heat transfer in frost and snow.
Auracher, H., International Heat Transfer Conference, 6th, Toronto, Canada, Aug. 7-11, 1978. Proceedings, Washington, D.C., Hemisphere Publishing Corporation, 1978, p.25-30, 20 refs.
Heat transfer, Frost, Snow thermal properties, Water vapor, Vapor diffusion, Radiation, Conduction, Hoarfrost.

41-467
Analysis of the freezing around a chilled pipe in darcy flow.
Okada, M., et al, International Heat Transfer Conference, 6th, Toronto, Canada, Aug. 7-11, 1978. Proceedings, Washington, D.C., Hemisphere Publishing Corporation, 1978, p.31-36, 6 refs.
Kimura, K., Watanabe, I.
Soil freezing, Underground pipelines, Heat transfer, Porous materials, Freezing, Analysis (mathematics).

41-468
Blockage of flow resulting from freezing of liquid introduced into circular tubes located in low-temperature environments.
Creighton, D.L., et al, International Heat Transfer Conference, 6th, Toronto, Canada, Aug. 7-11, 1978. Proceedings, Washington, D.C., Hemisphere Publishing Corporation, 1978, p.37-42, 10 refs.
Wang, J.H.
Pipes (tubes), Liquid solid interfaces, Flow rate, Heat transfer, Freezing points, Liquid phases, Thermal diffusion, Velocity, Temperature effects.

41-469
Dynamic testing of a cryogenic heat pipe/radiator.
Cenkner, A.A., Jr., et al, International Heat Transfer Conference, 6th, Toronto, Canada, Aug. 7-11, 1978. Proceedings, Washington, D.C., Hemisphere Publishing Corporation, 1978, p.105-110, 8 refs.
Nelson, B.E., Chuvala, J.T.
Heating, Cryogenics, Radiation, Dynamic properties, Low temperature tests.

41-470
Effects of radiation on the melting of a semi-transparent, semi-infinite medium.
Cho, C., et al, International Heat Transfer Conference, 6th, Toronto, Canada, Aug. 7-11, 1978. Proceedings, Washington, D.C., Hemisphere Publishing Corporation, 1978, p.373-378, 14 refs.
Özisik, M.N.
Melting points, Radiation, Liquid solid interfaces, Phase transformations, Stefan problem, Analysis (mathematics).

41-471
Final report.
Workshop on Alaskan Hydrology: Problems Related to Glacierized Basins, Eagle River, Alaska, Apr. 1985, *Alaska. University. Geophysical Institute. Report,* June 1986, AUG-R (306), 106p. + 3 appends., Refs. passim. For individual papers see 41-472 through 41-476.
Benson, C., ed.
Glacial hydrology, Runoff forecasting, Glacial deposits, River ice, Permafrost hydrology, Reservoirs, Meetings, Snow cover effect, Ice cover effect, Sediment transport, United States—Alaska.

41-472
Effects of glaciers on runoff and runoff forecasting.
Benson, C., et al, *Alaska. University. Geophysical Institute. Report,* June 1986, UAG-R (306), p.6-32, Refs. p.29-32.
Runoff forecasting, Glacial hydrology, Glacier mass balance, Glacier melting, Seasonal variations, Models, United States—Alaska.

41-473
Natural hazards caused by glaciers.
Björnsson, H., et al, *Alaska. University. Geophysical Institute. Report,* June 1986, UAG-R (306), p.33-52, Refs. p.49-52.
Glacial hydrology, Floods, Glacier melting, Glacier surges, Economic analysis, Damage, Climatic factors, Avalanches, Volcanoes, Icebergs, United States—Alaska.

41-474
Glaciers and sediment.
Bezinge, A., et al, *Alaska. University. Geophysical Institute. Report,* June 1986, UAG-R (306), MP 2154, p.53-69, Refs. p.64-67.
Chacho, E.F., Lawson, D.E.
Glacial deposits, Sediment transport, Glacial hydrology, Glacier surges, Glacier oscillation, United States—Alaska.

41-475
Ice problems associated with rivers and reservoirs.
Benson, C., et al, *Alaska. University. Geophysical Institute. Report,* June 1986, UAG-R (306), MP 2155, p.70-98, Refs. p.95-98.
Calkins, D.J., Chacho, E.F., Lawson, D.E.
Ice conditions, River ice, Reservoirs, Lake ice, Ice control, Ponds, Water reserves, Ice forecasting, United States—Alaska.

41-476
Permafrost.
Benson, C., et al, *Alaska. University. Geophysical Institute. Report,* June 1986, UAG-R (306), MP 2156, p.99-106, 19 refs.
Chacho, E.F., Kane, D.
Permafrost hydrology, Runoff, Engineering, Glacial rivers, Frozen ground, Mountains, United States—Alaska.

41-477
Problems of chemical defence operations in extreme cold.
Stearman, R.L., *U.S. Army Dugway Proving Ground. Document,* June 1985, DPG-S-TA-85-08, 46p. + 2 appends., 31 refs.
Military operation, Chemical composition, Aerosols, Cold exposure, Protection, Cold weather operation, Air pollution, Logistics, Climatic factors, Clothing, Altitude.

41-478
National aircraft icing technology plan.
Barney, W.S., *U.S. Federal Coordinator for Meteorological Services and Supporting Research. [Report],* Apr. 1986, FCM-P20-1986, 47p. + append., 5 refs.
Aircraft icing, Ice detection, Ice forecasting, Meteorological factors, Maintenance, Analysis (mathematics), Research projects, Tests, Computer applications.

41-479
Snow melter.
Muhammad, C.C., *U.S. Patent Office. Patent,* Oct. 18, 1983, 8 col., USP-4,409,957, 6 refs.
Snow melting, Equipment, Heat transfer, Heat sources.

41-480
USSR energy atlas. U.S. Central Intelligence Agency, Jan. 1985, 79p.
Economic development, Cold weather construction, Natural resources, Maps, Electric power, USSR.

41-481
Evidence in favour of an extensive ice cover on subantarctic Kerguelen Island during the last glacial.
Hall, K., *Palaeogeography, palaeoclimatology, palaeoecology*, Oct. 1984, 47(3/4), p.225-232, 14 refs.
DLC QE500.P25
Glacial geology, Paleoclimatology, Cirques, Ice cover, Kerguelen Islands.
Arguments to date have suggested that during the last glacial (Würm-Wisconsin-Weichselian) subantarctic Kerguelen I. did not experience an extensive ice cover and that the fjords and glacial valleys are products of earlier events. Recent observations of striation orientations, travel directions of erratics, cirque altitudes, and evidence for isostatic uplift suggest that there in fact may have been extensive ice cover. The equilibrium line altitude (E.L.A.) reconstructed for the cirque glacier stage agrees well with that for subantarctic Marion I. situated to the west. A possible explanation for the lack of glacial deposits and landforms over much of the island is suggested. (Auth.)

41-482
Crystalline substances and products (methods of estimating and improving qualities). [Kristallicheskie veshchestva i produkty (metody otsenki i sovershenstvovaniia svoistv)],
Khamskii, E.V., Moscow, Khimiia, 1986, 222p., In Russian with abridged English table of contents enclosed. 192 refs.
Ice physics, Phase transformations, Ice formation, Crystals, Crystal growth, Lattice models.

41-483
Compendium of Arctic environmental information.
Welsh, J.P., et al, *U.S. Naval Ocean Research and Development Activity. Report*, Mar. 1986, No.138, 142p., Refs. passim.
Ice navigation, Ice conditions, Sea ice distribution, Remote sensing, Ice islands, Underwater acoustics, Oceanography, Submarines, Logistics, Climatology, Arctic Ocean.

41-484
Spectral distribution of light under a subarctic winter lake cover.
Roulet, N.T., et al, *Hydrobiologia*, Mar. 1986, 134(1), p.89-95, 21 refs.
Adams, W.P.
Lake ice, Light transmission, Snow cover effect, Wave propagation, Limnology, Distribution.

41-485
Thermodynamic calculations of ice production in the northern Baltic proper.
Stössel, A., *Deutsche hydrographische Zeitschrift*, 1985, 38(6), p.261-284, With French and German summaries. 36 refs.
Ice growth, Ice navigation, Ice cover thickness, Snow depth, Ice volume, Ice conditions, Thermodynamics, Computer applications, Models, Ice physics.

41-486
Excess loss of single-mode jacketed optical fiber at low temperature.
Yabuta, T., et al, *Applied optics*, Aug. 1983, 22(15), p.2356-2362, 7 refs.
Yoshizawa, N., Ishihara, K.
Low temperature tests, Optical properties, Cables (ropes), Glass fibers, Fiber optics, Light transmission, Analysis (mathematics).

41-487
Forecasts and the efficiency of fleet performance. Collection of scientific papers. [Prognozirovanie i effektivnost' raboty flota. Sbornik nauchnykh trudov],
Shchelkanov, A.G., ed, Leningrad, Transport, 1985, 105p., In Russian. For selected papers see 41-488 through 41-492. Refs. passim.
Estuaries, Ice navigation, Ships, Icebreakers, Rivers, Transportation, Arctic Ocean.

41-488
Determining the economic effectiveness of investments in the Arctic Fleet. [Opredelenie narodnokhoziaistvennoi ekonomicheskoi effektivnosti kapital'nykh vlozhenii v arkticheskii flot],
Dolban, V.A., Prognozirovanie i effektivnost' raboty flota. Sbornik nauchnykh trudov (Forecasts and the efficiency of fleet performance. Collection of scientific papers) edited by Shchelkanov, A.G., Leningrad. Transport, 1985, p.6-10, In Russian. 7 refs.
Ice navigation, Merchant marine, Cost analysis, Arctic Ocean.

41-489
Computerized simulation of fleet performance in the Arctic. [Sozdanie unitatsionnoi modeli raboty flota v Arktike],
Batskikh, I.U.M., et al, Prognozirovanie i effektivnost' raboty flota. Sbornik nauchnykh trudov (Forecasts and the efficiency of fleet performance. Collection of scientific papers) edited by Shchelkanov, A.G., Leningrad. Transport, 14985, p.48-53, In Russian. 6 refs.
Slavnikov, A.I.
Ice navigation, Icebreakers, Marine transportation, Ships, Arctic Ocean.

41-490
Increasing the efficiency of fleet performance on the Kolyma route. [Povyshenie effektivnosti raboty flota na Kolymskom napravlenii],
Varaksin, K.N., et al, Prognozirovanie i effektivnost' raboty flota. Sbornik nauchnykh trudov (Forecasts and the efficiency of fleet performance. Collection of scientific papers) edited by Shchelkanov, A.G., Leningrad. Transport, 1985, p.54-56, In Russian.
Kovalev, V.N., Tarabukin, N.M.
Icebreakers, Transportation, Ships, Ice navigation, Subpolar regions, Permafrost beneath rivers, USSR—Kolyma River.

41-491
Efficiency of small barge-carriers in the transportation-technological system of the Arctic region. [Effektivnost' malogo likhterovoza v transportno-tekhnologicheskoi sisteme Arkticheskogo regiona],
Vysotskaia, N.A., Prognozirovanie i effektivnost' raboty flota. Sbornik nauchnykh trudov (Forecasts and the efficiency of fleet performance. Collection of scientific papers) edited by Shchelkanov, A.G., Leningrad. Transport, 1985, p.61-62, In Russian. 1 ref.
Ice navigation, Transportation, Ships, River ice, Sea ice.

41-492
Using barge-carrier systems in Arctic transportation. [Ispol'zovanie likhterovoznykh sistem v arkticheskikh perevozkakh],
Pavskii, E.I., Prognozirovanie i effektivnost' raboty flota. Sbornik nauchnykh trudov (Forecasts and the efficiency of fleet performance. Collection of scientific papers) edited by Shchelkanov, A.G., Leningrad. Transport, 1985, p.62-67, In Russian.
Icebreakers, Ice navigation, Estuaries, River ice, Ice conditions, Sea ice, Arctic Ocean.

41-493
Antenna towers and antenna-supporting structures.
Canadian Standards Association, CSA standard S37-M1981, Rexdale, Ontario, Canadian Standards Association, Oct. 1981, 65p.
Antennas, Towers, Ice loads, Foundations, Manuals, Steel structures, Concrete structures, Wind factors, Loads (forces), Ice cover thickness.

41-494
"Slow" physics of large continental ice sheets and underlying bedrock and its relation to the Pleistocene Ice Ages.
Birchfield, G.E., et al, *Journal of geophysical research*, Nov. 1985, 90(B13), p.11,294-11,302, Refs. p.11,301-11,302.
Grumbine, R.W.
Ice creep, Ice physics, Ice sheets, Glacier beds, Ice models, Rheology, Glacier oscillation, Viscoelasticity, Analysis (mathematics), Pleistocene.

41-495
Applications and limitations of finite element modeling to glaciers: a case study.
Nixon, W.A., et al, *Journal of geophysical research*, Nov. 1985, 90(B13), p.11,303-11,311, 37 refs.
Glacier flow, Glacier surfaces, Ice temperature, Ice creep, Ice models, Ice conditions, Velocity, Temperature effects, Analysis (mathematics), Glacier thickness, Rheology.

41-496
Microstructure and the resistance of rock to tensile fracture.
Peck, L., et al, *Journal of geophysical research*, Nov. 1985, 90(B13), MP 2157, p.11,533-11,546, Refs. p.11,545-11,546.
Barton, C.C., Gordon, R.B.
Microstructure, Rocks, Tensile properties, Fracturing, Grain size, Mineralogy, Scanning electron microscopy, Tests, Cracking (fracturing).
The resistance of rock to tensile fracture may be measured by its fracture energy G(I), which is found to range from 40 to 200 J/sq m in tests on nine types of sedimentary and crystalline rock. Differences in microstructure among the rocks tested are the principal cause of differences in the steady state value of G(I), in the distance that a crack must advance before steady state fracturing is attained, and in the amplitude of the fluctuation of G(I) that accompanies crack advance. When nearly continuous surfaces of weakness are present, as in the Salem limestone, G(I) is low and attains steady state after only a small amount of crack advance. When a preexisting, interconnected network of microcracks is exploited by the fracture process, G(I) is large, and steady state is attained only after extended crack propagation. The sensitivity of G(I) to crack speed and the presence of water is low under the test conditions used in all the rocks examined. However, the magnitude of G(I) measured in a given type of rock depends on the configuration of the test specimen and on components of stress near the crack tip that do not influence crack growth in linearly elastic materials. The conditions under which G(I) can be considered a material property are therefore restricted.

41-497
Molecular dynamics investigation of the crystal-fluid interface. 4. Free energies of crystal-vapor systems.
Broughton, J.Q., et al, *Journal of chemical physics*, May 15, 1986, 84(10), p.5741-5748, 33 refs.
Gilmer, G.H.
Liquid solid interfaces, Phase transformations, Molecular energy levels, Vapor transfer, Crystals, Stresses, Thermodynamics, Melting points, Enthalpy, Dynamic properties.

41-498
Molecular dynamics of the crystal-fluid interface. 5. Structure and dynamics of crystal-melt systems.
Broughton, J.Q., et al, *Journal of chemical physics*, May 15, 1986, 84(10), p.5749-5758, 22 refs.
Gilmer, G.H.
Liquid solid interfaces, Molecular energy levels, Crystals, Structural analysis, Melting points, Dynamic properties, Phase transformations, Thermodynamics, Density (mass/volume).

41-499
Molecular dynamics investigation of the crystal-fluid interface. 6. Excess surface free energies of crystal-liquid systems.
Broughton, J.Q., et al, *Journal of chemical physics*, May 15, 1986, 84(10), p.5759-5768, 3- refs.
Gilmer, G.H.
Liquid solid interfaces, Molecular energy levels, Crystals, Surface temperature, Dynamic properties, Phase transformations.

41-500
Elastic properties and equation of state of high pressure ice.
Shaw, G.H., *Journal of chemical physics*, May 1986, 84(10), p.5862-5868, 44 refs.
High pressure ice, Ice elasticity, Compressive properties, Ice structure, Phase transformations, Temperature effects.

41-501
Bacterial populations in soils of a subantarctic island.
French, D.D., et al, *Polar biology*, 1986, 6(2), p.75-82, 22 refs.
Smith, V.R.
Soil analysis, Ice sampling, Bacteria, Soil microbiology, Marion Island.
Bacteria were counted (direct counts using acridine orange) in soil samples from 12 sites on Marion I. Numbers, cell types and cell volumes varied widely between sites. Five main cell shapes were distinguished, and each divided into up to 4 size-classes. Numbers were related negatively to climatic severity and positively to soil nutrient concentrations, vertebrate manuring, and availability of organic substrates. The combination of numbers, volumes, cell types and sizes, and fluorescence characteristics are interpreted as indicators of contrasting strategies for growth and reproduction, especially high or low "standing crop" vs high or low turnover, and these strategies related to site conditions. (Auth. mod.)

41-502
Waterproofing interlayers for the improvement of water- and thermal regime of roadbeds. [Gidroizoliruiushchie prosloiki dlia uluchsheniia vodno-teplovogo rezhima zemlianogo polotna],
Ruvinskii, V.I., et al, *Avtomobil'nye dorogi*, Dec. 1985, No.12, p.23-24, In Russian. 1 ref.
Roadbeds, Active layer, Frost heave, Waterproofing, Plastics, Frost resistance, Frost protection.

41-503
Aerodynamics of road embankments (a discussion). [Aerodinamika avtomobil'no-dorozhnoi nasypi (v poriadke obsuzhdeniia)],
Ivanov, V.D., *Avtomobil'nye dorogi*, Dec. 1985, No.12, p.25-26, In Russian. 3 refs.
Roadbeds, Embankments, Earth dams, Earth fills, Aeration, Air flow, Winter maintenance, Snowdrifts, Snow depth.

41-504
Prevention of naled formation on Kirghizian mountain roads. [Bor'ba s nalediami na gornykh dorogakh Kirgizii],
Turgunbaev, A.T., *Avtomobil'nye dorogi*, Dec. 1985, No.12, p.26-27, In Russian.
Roads, Winter maintenance, Ice prevention, Naleds, Trafficability, Alpine landscapes.

41-505
Embankments built of water-logged earth with horizontal sand-drains. [Nasypi iz pereuvlazhnennykh gruntov s gorizontal'nymi peschanymi drenazhami],
Vasil'ev, IU.M., *Avtomobil'nye dorogi*, Nov. 1985, No.11, p.2-3, In Russian.
Embankments, Soil compaction, Roadbeds, Soil freezing, Paludification, Drains.

41-506
Foundations built of dry cemented earth mixtures. [Ustroistvo osnovanii iz sukhikh tsementogruntovykh smesei],
Kosenko, A.A., *Avtomobil'nye dorogi*, Nov. 1985, No.11, p.4-5, In Russian.
Roadbeds, Earthwork, Soil cement, Cold weather construction, Construction equipment, Cold weather performance.

41-507
Reinforced concrete plating for bridge reconstructions. [Rekonstruktsiia mosta s ispol'zovaniem zhelezobetonnoi nakladnoi plity],
Kvasha, V.G., et al, *Avtomobil'nye dorogi*, Nov. 1985, No.11, p.5-7, In Russian. 3 refs.
Koval', P.N., Koval'chik, IA.P., Drozdovskii, K.I.
Waterproofing, Concrete structures, Piers, Ice passing, Ice pressure, Ice jams, Bridges, Freeze thaw cycles.

41-508
Calculating frost resistance of road pavements. [K raschetu morozostoikosti dorozhnykh odezhd],
Efimenko, V.N., et al, *Avtomobil'nye dorogi*, Nov. 1985, No.11, p.18-19, In Russian.
Shesler, A.I., Chernykh, G.F.
Pavements, Frost resistance, Frost penetration, Roads, Design, Thickness.

41-509
Efficient construction of road pavements for the Tiumen' region. [Ratsional'nye konstruktsii dorozhnykh odezhd dlia Tiumenskoi oblasti],
Kretov, V.A., et al, *Avtomobil'nye dorogi*, Mar. 1986, No.3, p.10-12, In Russian.
Kazarnovskii, V.D., Lintser, A.V.
Pavements, Soil cement, Roads, Permafrost beneath roads, Prefabrication, Construction materials.

41-510
Estimating design values of road freezing depths. [Prognozirovanie raschetnoi glubiny promerzaniia dorog],
Gal'voronskii, V.N., *Avtomobil'nye dorogi*, Mar. 1986, No.3, p.12-13, In Russian.
Pavements, Frost heave, Frost penetration, Roads, Clay soils, Forecasting.

41-511
Passing spring meltwater when pipes are clogged by naleds. [Propusk vesennego pavodka pri zakuporke trub nalediami],
Dement'ev, V.A., *Avtomobil'nye dorogi*, Mar. 1986, No.3, p.16-17, In Russian.
Winter maintenance, Naleds, Culverts, Ice prevention, Artificial melting, Roads.

41-512
Blasting frozen ground in restricted circumstances. [Rykhlenie merzlykh gruntov vzryvom v stesnennykh usloviiakh],
Toropov, V.V., *Bezopasnost' truda v promyshlennosti*, Jan. 1986, No.1, p.42-44, In Russian.
Permafrost physics, Drilling, Boreholes, Blasting.

41-513
Problems in soil stabilization. [Aktual'nye zadachi ukrepleniia gruntov],
Motylev, IU.L., *Avtomobil'nye dorogi*, Jan. 1986, No.1, p.10-11, In Russian.
Soil stabilization, Soil freezing, Frost penetration, Cements, Cement admixtures, Antifreezes.

41-514
Preservation of protective forest vegetation. [Sokhranit' snegozashchitnye lesnye nasazhdeniia],
Pod"iachev, G.P., *Avtomobil'nye dorogi*, Jan. 1986, No.1, p.15, In Russian.
Roads, Winter maintenance, Snowdrifts, Protective vegetation, Forest strips.

41-515
Combined optical and radar methods for studying the environment.
Shestopalov, V.P., et al, *Soviet physics. Doklady*, Nov. 1984, 29(11), p.963-964, Translated from Doklady Akademii Nauk SSSR. 5 refs.
DLC QC1.A386
Remote sensing, Ice structure, Ice cover, Side looking radar, Sea ice.
The Cosmos-1500 satellite complex makes it possible to transmit separate images of the underlying surfaces of Arctic regions, obtained by the MSS-I (optomechanical scanning system of low resolution) and SVR (side-view radar). As an illustration of the possibilities of combined sounding, the images obtained by the MSS-I and SVR for a region of Antarctica are presented. (Auth.)

41-516
Problems of studying sediment balance in coastal zones of seas. [Problemy issledovaniia balansa nanosov v beregovoi zone morei],
Shulskii, IU.D., Leningrad, Gidrometeoizdat, 1986, 240p., In Russian with abridged English table of contents enclosed. Refs. p.230-235.
Shores, Coastal topographic features, Sedimentation, Shore erosion, Abrasion, Ice rafting, Glacial deposits.

41-517
Water protection structures at railroads. [Vodookhrannye sooruzheniia na zheleznodorozhnom transporte],
Dikarevskii, V.S., et al, Moscow, Transport, 1986, 211p. (Pertinent p.123-211), In Russian with abridged English table of contents enclosed. Refs. p.202-203.
Karavaev, I.I.
Water supply, Water treatment, Waste disposal, Drainage, Water pipelines, Railroads, Permafrost beneath structures.

41-518
Calculation and prediction of the : egime and distribution of mountain glaciers. [Rashchet i prognoz raspredeleniia i rezhima gornykh lednikov],
Tokmagambetov, G.A., et al, Alma-Ata, Nauka, 1985, 159p., In Russian with English table of contents enclosed. 161 refs.
Erasov, N.V.
Glacial lakes, Mountain glaciers, Mudflows, Snow line, Firn, Ice volume, Snow cover distribution, Glacier mass balance, Glacier alimentation, Glacier ablation, Glacier hydrology, Runoff.

41-519
Problems of ecology and environmental protection (Collections of papers of the First Republican Conference), Vol.1. [Problemy ekologii i okhrany okruzhaiushchei sredy. Tom 1, (Sbornik trudov Pervoi Respublikanskoi konferentsii)],
Respublikanskaia nauchno-metodicheskaia konferentsiia vysshikh uchebnykh zavedenii Gruzinoskoi SSR po obrazovaniiu v oblasti okhrany okruzhaiushchei sredy, 1st, Tbilissi, June 26-28, 1980, Izd-vo Tbilisskogo universiteta, 1983, 292p., In Russian. For the selected paper see 41-520.
Chikovani, E.N., ed.
Underground storage, Petroleum products, Permafrost thermal properties, Permafrost structure, Rock excavation, Blasting.

41-520
Underground storage of petroleum products in the Far North. [Podzemnoe khranenie nefteproduktov v usloviiakh Krainego Severa],
Braiko, V.N., et al, Problemy ekologii i okhrany okruzhaiushchei sredy. Tom 1, (Sbornik trudov Pervoi Respublikanskoi konferentsii) (Problems of ecology and environmental protection (Collection of papers of the First Republican Conference, Vol.1)) edited by E.N. Chikovani, Izd-vo Tbilisskogo Universiteta, 1983, p.107-109, In Russian.
Smirnov, V.I., Sil'vestrov, L.K., Dombrovskii, G.A.
Rock excavation, Underground storage, Blasting, Petroleum products, Permafrost thermal properties, Permafrost structure, Walls, Linings, Ice (construction material).

41-521
One hundred years of genetic pedology. [Sto let geneticheskogo pochvovedeniia],
Kovda, V.A., ed, Moscow, Nauka, 1986, 276p., In Russian. For selected paper see 41-522. Refs. p.118-125.
Egorov, V.V., ed.
Geocryology, Cryogenic soils, Tundra, Soil formation, Hydrothermal processes, Forest tundra, Steppes, Plant ecology.

41-522
Recent cryological problems of the Dokuchaev pedology. [Sovremennye kriologicheskie problemy dokuchaevskogo pochvovedeniia],
Makeev, O.V., et al, Sto let geneticheskogo pochvovedeniia (One hundred years of genetic pedology) edited by V.A. Kovda and V.V. Egorov, Moscow, Nauka, 1986, p.118-125, In Russian. Refs. p.124-125.
Tundra, Geocryology, Plant ecology, Cryogenic soils, Soil formation, Landscape types, Hydrothermal processes, Forest tundra, Steppes.

41-523
Cold set concrete.
Beach, W.G., *Alaska. Dept. of Transportation and Public facilities. Report*, Mar. 1986, No.AK-RD-86-28, 12p. + 53 figs.
Concrete curing, Concrete admixtures, Freeze thaw cycles, Concrete durability, Ice crystal growth, Freezing points, Concrete placing, Tests.

41-524
Airfield pavement evaluation, Bryant Army Airfield (Fort Richardson), Anchorage, Alaska.
Alexander, D.R., *U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. Geotechnical Laboratory. Miscellaneous paper*, Feb. 1986, GL-86-10, 36p. + figs., 10 refs.
Pavements, Military engineering, Airports, Tests, Cracking (fracturing), Maintenance, Loads (forces), Snow cover effect, Fog, United States—Alaska—Anchorage.

41-525
Nature of the 'free' OH groups in water.
Giguère, P.A., et al, *Journal of Raman spectroscopy*, Aug. 1986, 17(4), p.341-344, 30 refs.
Pigeon-Gosselin, M.
Ice physics, Hydrogen bonds, Molecular structure, Spectra, Models, Water.

41-526
Age of the Arctic.
Young, O.R., *Foreign policy*, Winter 1985-86, No.61, p.160-179.
Military operation, Economic development, Polar regions, Arctic Ocean, USSR, United States, Canada.

41-527
Properties of filamentary sublimation residues from dispersions of clay and ice.
Saunders, R.S., et al, *Icarus*, Apr. 1986, 66(1), p.94-104, 11 refs.
Extraterrestrial ice, Ice sublimation, Impurities, Clay minerals, Mars (planet), Scanning electron microscopy, X ray diffraction, Infrared spectroscopy, Experimentation.

41-528
Engineering analysis of beach erosion at Homer Spit, Alaska.
Smith, O.P., et al, *U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. Coastal Engineering Research Center. Miscellaneous paper*, Sep. 1985, CERC-85-13, 29p. + 5 appends., ADA-165 132, 23 refs.
Soil erosion, Shoreline modification, Sediment transport, Engineering, Protection, Wind factors, Ocean waves, Forecasting, Mathematical models, Marine geology, United States—Alaska—Cook Inlet.

41-529
Initial assessment of the 600-gallon-per-hour Reverse Osmosis Water Purification Unit. Field water supply on the winter battlefield.
Bouzoun, J.R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1986, SR 86-20, 6p., ADA-171 989, 3 refs.
Reed, S.C., Diener, C.J.
Water supply, Military facilities, Water treatment, Cold weather performance, Water pollution, Logistics, Water temperature.
An initial study was conducted to determine the effects of raw water temperature on the finished water production rates of the Army's new 600-gal./hr Reverse Osmosis Water Purification Unit (ROWPU). This study showed that the finished water production rates decreased from 687 gal./hr at a raw water temperature of 68.3 F to 348 gal./hr at a raw water temperature of 33.7 F. The report also has a list of suggestions on how to set up and operate the ROWPU on the winter battlefield.

41-530
Thermodynamic theories of precipitation, dissolution, freezing and melting potentials.
Rastogi, R.P., et al, *Indian Chemical Society. Journal*, Jan. 1986, 63(1), p.179-185, 15 refs.
Pandey, P.C., Tripathi, A.K.
Freezing, Melting, Thermodynamics, Precipitation (meteorology), Chemical analysis, Theories.

41-531
Freezing fracture of curved water pipes (1st report, freezing behavior of 180 deg curved pipes).
Oiwake, S., et al, *Japan Society of Mechanical Engineers. Bulletin*, July 1986, 29(253), p.2151-2155, 7 refs.
Inaba, H.
Water pipes, Ice formation, Freezing, Water flow, Phase transformations, Temperature effects, Experimentation, Analysis (mathematics).

41-532
Study of the melting process in ice-air composite materials (in the case where a temperature gradient exists in porous materials).
Aoki, K., et al, *Japan Society of Mechanical Engineers Bulletin*, July 1986, 29(253), p.2138-2144, 5 refs.
Hattori, M., Chiba, S.
Ice melting, Snow melting, Porous materials, Air entrainment, Thermal conductivity, Temperature gradients, Phase transformations, Stefan problem, Heat loss, Analysis (mathematics).

41-533
Field measurements under winter conditions.
International Northern Research Basins Symposium/Workshop, Houghton, MI, Jan. 26-30, 1986, U.S. National Committee for Scientific Hydrology, Working Group on Northern Research Basins, [1986], 323p.
Refs. passim. A previous issuance of these proceedings was distributed earlier in 1986. For papers from that issuance see 40-2126 through 40-2140. The present issuance includes most of those papers plus several additional ones. For added papers see 41-534 through 41-539.
Santeford, H.S., comp.
Ice conditions, River ice, Ice jams, Runoff, Ice dams, Ice melting, Snowmelt, Meetings, Hydrology, Ice control.

41-534
Some practical aspects of graphical ice reduction.
Hyvarinen, V., International Northern Research Basins Symposium/Workshop, Houghton, MI, Jan. 26-30, 1986. Proceedings. Compiled by H.S. Santeford, U.S. National Committee for Scientific Hydrology, Working Group on Northern Research Basins, [1986], p.25-29, 1 ref.
Ice conditions, Ice dams, Stream flow, Ice control, Runoff, Water level, Seasonal variations, Finland.

41-535
Winter and summer low flows in Finland.
Kuusisto, E., International Northern Research Basins Symposium/Workshop, Houghton, MI, Jan. 26-30, 1986. Proceedings. Compiled by H.S. Santeford, U.S. National Committee for Scientific Hydrology, Working Group on Northern Research Basins, [1986], p.31-38, 7 refs.
Runoff, Hydrology, Stream flow, Lake water, Snow water equivalent, Seasonal variations, Water supply, Finland.

41-536
Program of collecting data of ice jams.
Laasanen, O., International Northern Research Basins Symposium/Workshop, Houghton, MI, Jan. 26-30, 1986. Proceedings. Compiled by H.S. Santeford, U.S. National Committee for Scientific Hydrology, Working Group on Northern Research Basins, [1986], p.39-43.
Ice jams, Floods, Runoff, Damage, Climatic factors, Water level, Finland.

41-537
Interactive effects of river ice conditions, hydroelectric power plants and multipurpose watercourse operation.
Maunula, M., International Northern Research Basins Symposium/Workshop, Houghton, MI, Jan. 26-30, 1986. Proceedings. Compiled by H.S. Santeford, U.S. National Committee for Scientific Hydrology, Working Group on Northern Research Basins, [1986], p.45-54.
River ice, Ice conditions, Runoff, Ice breakup, Stream flow, Frazil ice, Ice dams, Electric power, Hydrology, Research projects, Finland.

41-538
Overview of the U.S. Geological Survey's Hydrologic Instrumentation Facility.
Wagner, C.R., International Northern Research Basins Symposium/Workshop, Houghton, MI, Jan. 26-30, 1986. Proceedings. Compiled by H.S. Santeford, U.S. National Committee for Scientific Hydrology, Working Group on Northern Research Basins, [1986], p.209-218.
Hydrology, Water reserves, Equipment, Measuring instruments, Stream flow, Ground water.

41-539
Field data for the numerical modeling of winter conditions and computerized testing of field data.
Reiter, P.H., et al, International Northern Research Basins Symposium/Workshop, Houghton, MI, Jan. 26-30, 1986. Proceedings. Compiled by H.S. Santeford, U.S. National Committee for Scientific Hydrology, Working Group on Northern Research Basins, [1986], p.305-317.
Huokuna, M.
River ice, Ice conditions, Ice formation, Ice breakup, Computer applications, Ice dams, Ice forecasting, Models, Meteorological data, Water level, Finland.

41-540
Stabilization of fine-grained soil for road and airfield construction.
Danyluk, L.S., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1986, SR 86-21, 37p., ADA-172 600, 14 refs.
Soil stabilization, Roads, Frost resistance, Bitumens, Cement admixtures, Subgrade soils, Grain size, Liming, Chemical properties, Organic soils, Frost heave, Airports.
A laboratory study was conducted to determine the feasibility of stabilizing an organic silt for use in sub-base or base courses for all-weather, low-volume roads and airfields in Alaska. The soil used in this study has an organic content of 12% and a modified Proctor value of 79.1 lb/cu ft at a 29% moisture content. The stabilizers evaluated were: cement, cement with additives (calcium chloride, hydrogen peroxide, sodium sulfate, and lime), lime, lime/fly ash, asphalt emulsion, tetrasodium polyphosphate, and calcium acrylate. Unconfined compressive strengths obtained were: 39 lb/sq in. with 20% cement, 64 lb/sq in. with 20% cement and 2% calcium chloride, 51 lb/sq in. with asphalt emulsion, and 348 lb/sq in. with calcium chloride. Lime and lime/fly ash proved to be ineffective for this soil. Although tetrasodium polyphosphate did not improve the soil's strength it did reduce frost susceptibility and permeability.

41-541
Architectural and structural type of the 1986-1995 models of refueling-tankers. [Arkhitekturno-konstruktivnyĭ tip tankerov popolneniia 1986-1995 gg],
Morelnis, F.A., et al, Arkhitekturno-konstruktivnyĭ tip, morekhodnye i ledovye kachestva perspektivnykh sudov (Architectural and structural types, seafaring and ice navigation qualities of promising ships) edited by IU.I. Panin, Leningrad, Transport, 1984, p.19-29, In Russian. 3 refs.
Glazov, S.F.
Petroleum transportation, Tanker ships, Ice navigation, Icebreakers.

41-542
Selection of architectural and structural types and technical-economic analyses of timber-transporting ships. [Vybor arkhitekturno-konstruktivnogo tipa i tekhniko-ekonomicheskoe issledovanie sudov-khlystovozov],
Sokolov, L.G., et al, Arkhitekturno-konstruktivnyĭ tip, morekhodnye i ledovye kachestva perspektivnykh sudov (Architectural and structural types, seafaring and ice navigation qualities of promising ships) edited by IU.I. Panin, Leningrad, Transport, 1984, p.29-37, In Russian. 7 refs.
Iskoz, E.B., Shchuklenkova, O.N.
Transportation, Ships, Ice navigation, Construction materials.

41-543
Mathematical modeling of hydrometeorological processes. [Matematicheskoe modelirovanie gidrometeorologicheskikh protsessov],
Denisov, IU.M., ed, *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.111, 84p., In Russian. For selected papers see 41-544 through 41-546. Refs. passim.
Borovikova, L.N., ed.
Spaceborne photography, Snow cover distribution, Snow depth, Snow water equivalent, Route surveys, Aerial surveys, Mountain glaciers, Glacial lakes, Ice dams, Floods, Alpine landscapes, Mathematical models, Snow surveys.

41-544
Macroscale model of snow cover formation in mountainous regions. [Makromasshtabnaia model' formirovaniia snezhnogo pokrova na territorii gornogo regiona],
Shetsis, I.D., *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.111, p.15-27, In Russian. 12 refs.
Snow surveys, Alpine landscapes, Spaceborne photography, Snow cover distribution, Snow depth, Mathematical models, Snow water equivalent, Topographic effects.

41-545
Methods of using measurements to correct model-based calculations of snow reserves in mountains. [Metody korrektirovki rascheta snegozapasov v gorakh po modeli dannymi izmereniĭ],
Shentsis, I.D., et al, *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.111, p.27-36, In Russian. 8 refs.
Ionova, V.B.
Snow surveys, Snow depth, Snow water equivalent, Route surveys, Alpine landscapes, Aerial surveys.

41-546
Calculating hydrological characteristics of the Mertsbakher Lake outburst. [Raschet gidrologicheskikh kharakteristik proryva ozera Mertsbakhera],
Glazyrin, G.E., et al, *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.111, p.36-43, In Russian. 10 refs.
Kagan, A.G.
Mountain glaciers, Glacial lakes, Glacial hydrology, Moraines, Ice dams, Floods.

41-547
Mathematical modelling. Processes in complex economic and ecological systems. [Matematicheskoe modelirovanie. Protsessy v slozhnykh ekonomicheskikh i ekologicheskikh sistemakh],
Samarskiĭ, A.A., ed, Moscow, Nauka, 1986, 295p., In Russian. For selected paper see 41-548. 15 refs.
Moiseev, N.N., ed, Petrov, A.A., ed.
Tundra, Ecology, Ecosystems, Animals, Plants (botany), Mathematical models, Landscape types.

41-548
Modeling tundra populations and communities. [O modelirovanii tundrovykh populiatsiĭ i soobshchestv],
Baĭbikov, E.V., et al, Matematicheskoe modelirovanie. Protsessy v slozhnykh ekonomicheskikh i ekologicheskikh sistemakh (Mathematical modelling. Processes in complex economic and ecological systems) edited by A.A. Samarskiĭ, N.N. Moiseev, A.A. Petrov, Moscow, Nauka, 1986, p.207-219, In Russian. 15 refs.
Tundra, Landscape types, Ecology, Ecosystems, Animals, Plants (botany), Mathematical models.

41-549
Quaternary research (Selected papers of the 11th INQUA Congress). [Issledovaniia chetvertichnogo perioda. (Izbrannye doklady XI congressa INKVA)],
Kartashov, I.P., ed, Moscow, Nauka, 1986, 200p., In Russian. For selected paper see 41-550. Refs. p.192-193.
Nikiforova, K.V., ed.
Mars (planet), Slope processes, Glaciation, Patterned ground, Glacial erosion, Polygonal topography, Glacier ice, Topographic features, Periglacial processes, Landslides.

41-550
Mars: periglacial and glacial relief forms. [Mars: perigliatsial'nye i lednikovye formy rel'efa],
Lucchitta, B.K., Issledovaniia chetvertichnogo perioda. (Izbrannye doklady XI congressa INKVA) (Quaternary research (Selected papers of the 11th INQUA Congress)) edited by I.P. Kartashov and K.V. Nikiforova, Moscow, Nauka, 1986, p.183-193, In Russian. Refs. p.192-193.
Mars (planet), Glacial erosion, Slope processes, Patterned ground, Landslides, Polygonal topography, Glacier ice, Glaciation, Geocryology, Topographic features, Periglacial processes.

41-551
High altitude flora of northern Tien Shan. [Vysokogornaia flora Severnogo Tian'-Shania],
Baĭtenov, M.S., Alma-Ata, Nauka, 1985, 231p., In Russian with English table of contents enclosed. Refs. p.199-207.
Alpine tundra, Plant ecology, Deserts, Ecosystems, Cryogenic soils, Alpine glaciation, Alpine landscapes, Environmental protection, Landscape types.

41-552
Thermodynamic properties of metastable systems and the kinetics of phase transformations. [Termodinamicheskie svoĭstva metastabil'nykh sistem i kinetika fazovykh prevrashcheniĭ],
Nikitin, E.D., ed, Sverdlovsk, 1985, 87p., In Russian. For the selected paper see 41-553. 19 refs.
Phase transformations, Supercooling, Water, Heavy water, Nucleation, Ice crystal nuclei, Ice crystal growth.

41-553
Nucleation and growth of crystals in amorphous layers of water, heavy water and organic substances. [Zarozhdenie i rost kristallov v amorfnykh sloiakh vody, tiazheloĭ vody i organicheskikh veshchestv],
Bogdanov, N.M., et al, Termodinamicheskie svoĭstva metastabil'nykh sistem i kinetika fazovykh prevrashcheniĭ (Thermodynamic properties of metastable systems and the kinetics of phase transformations) edited by E.D. Nikitin, Sverdlovsk, 1985, p 30-43, In Russian. 19 refs.
Koverda, V.P., Skripov, V.P.
Ice crystal nuclei, Phase transformations, Supercooling, Ice crystal growth, Water, Heavy water, Nucleation.

41-554
Naval power plants and equipment. [Sudovye energeticheskie ustanovki i oborudovanie],
Panin, IU.I., ed, *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Sbornik nauchnykh trudov*, 1984, Vol.297, 153p., In Russian. For selected paper see 41-555. 4 refs.
Ice navigation, Icebreakers, Nuclear power, Propellers, Ice floes, Ice cover thickness, Mathematical models.

41-555
Modeling the dynamics of the elastically-inertial system: GTZA (Main turbogear assembly)-shaft line-propeller, during its interaction with ice. [Modelirovanie dinamiki uprugoinertsionnoĭ sistemy GTZA-valoprovod-vint pri vzaimodeĭstvii so l'dom],
Basalygin, G.M., *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Sbornik nauchnykh trudov*, 1984, Vol 297, p.52-60, In Russian. 4 refs.
Ice navigation, Icebreakers, Nuclear power, Propellers, Ice floes, Ice cover thickness, Mathematical models.

41-556
Seas of the World Ocean. [Moria Mirovogo okeana],
Sukhoveĭ, V.F., Leningrad, Gidrometeoizdat, 1986, 288p., In Russian with English summary. 140 refs.
Icebergs, Ice formation, Floating ice, Sea ice distribution, Antarctica—Weddell Sea, Antarctica—Ross Sea.
Physico-geographical conditions, bottom topography, meteorological conditions, circulation of surface, subsurface, intermediate, deep and bottom water, vertical structure, mixing and spreading of water masses, optical characteristics of water, level fluctuations, tides, formation and melting of sea ice are described in this book of 5 chapters in which the last deals with the antarctic ocean. Factors determining heat processes, water circulation, mixing and formation of different water masses in the Ross and Weddell seas are analyzed. Maximum temperature of the Antarctic Divergence was found at a depth of 500-600 m, approximately 1 deg C. Maximum salinity at this depth is reported to be 34.6-34.7 per mil, at 1000 m, it is 34.72-34.75 per mil. (Auth. mod.)

41-557
Systems and means of oceanic radio-communication. [Sistemy i sredstva morskoĭ radiosviazi],
Panin, IU.I., ed, Leningrad, Transport, 1984, 144p., In Russian. For selected papers see 41-558 and 41-559. Refs. passim.
Icebreakers, Glacial hydrology, Radio communication, Spacecraft, Ice surveys, Drift stations, Telecommunication, Meteorology, Ice navigation, Sea ice distribution, River ice.

41-558
Prospects for the development of a guidance system for ice navigation. [Perspektivy razvitiia sistemy upravleniia ledovoĭ provodkoĭ sudov],
Likhachev, A.V., Sistemy i sredstva morskoĭ radiosviazi (Systems and means of oceanic radio-communication) edited by IU.I. Panin, Leningrad, Transport, 1984, p.36-42, In Russian. 9 refs.
Ice navigation, Ships, Icebreakers, Telecommunication, Sea ice distribution, River ice.

41-559
Methods of determining optimal numbers of artificial Earth satellites for collecting information from automatic hydrometeorological stations. [Metodika opredeleniia optimal'nogo kolichestva iskusstvennykh sputnikov Zemli dlia sbora informatsii ot avtomaticheskikh gidrometeostantsiĭ],
Denisov, S.I., et al, Sistemy i sredstva morskoĭ radiosviazi (Systems and means of oceanic radio-communication) edited by IU.I. Panin, Leningrad, Transport, 1984, p.85-88, In Russian. 3 refs.
Trenin, V.M.
Spacecraft, Ice surveys, Remote sensing, Drift stations, Meteorology, Glacial hydrology.

41-560
Snow avalanche atlas, Seward Highway, south-central Alaska.
March, G.D., et al, *Alaska. Department of Natural Resources. Professional report*, 1982, No.81, 168p., 9 refs.
Robertson, L.G.
Avalanche formation, Avalanche tracks, Roads, Damage, Maps, Aerial surveys, Photography, Countermeasures, United States—Alaska—Seward Highway.

41-561
Program and abstracts.
Conference of the Comité arctique international: Restoration and Vegetation Succession in Circumpolar Lands, 7th, Reykjavik, Iceland, Sep. 7-13, 1986, [1986], 25p.
Vegetation, Revegetation, Ecosystems, Preserving, Polar regions, Environments, Economic development, Meetings.

41-562
Guide to marine transportation information sources in Canada.
Joba, J.C., *Transport Canada. Report*, Aug. 1985, TP 2431E, 308p., 2nd edition.
Marine transportation, Ice navigation, Oil spills, Organizations, Manuals, Engineering, Canada.

41-563
Formation of ice-marginal embankments into ice-dammed lakes in the eastern Puget Lowland, Washington, U.S.A., during the late Pleistocene.
Booth, D.B., *Boreas*, 1986, 15(3), p.247-263, Refs. p.261-263.
Embankments, Subglacial drainage, Ice dams, Lake ice, Glacial lakes, Pleistocene, Paleoclimatology, United States—Washington—Cascade Range.

41-564
Numerical simulation of melting of ice around a horizontal cylinder.
Ho, C.J., et al, *International journal of heat and mass transfer*, Sep. 1986, 29(9), p.1359-1369, With French, German and Russian summaries. 16 refs.
Chen, S.
Ice melting, Pipes (tubes), Heat transfer, Liquid solid interfaces, Phase transformations, Convection, Mathematical models, Time factor, Temperature effects.

41-565
Stability of vertical thermal buoyancy induced flows in cold pure and saline water.
Qureshi, Z.H., et al, *International journal of heat and mass transfer*, Sep. 1986, 29(9), p.1383-1392, With French, German and Russian summaries. 14 refs.
Gebhart, B.
Buoyancy, Water temperature, Salt water, Ice water interface, Thermal properties, Boundary layer, Density (mass/volume), Viscosity, Flow rate.

41-566
Ablative melting of a solid cylinder perpendicularly pressed against a heated wall.
Martin, H., et al, *International journal of heat and mass transfer*, Sep. 1986, 29(9), p.1407-1415, With French, German and Russian summaries. 6 refs.
Ice melting, Pipes (tubes), Heating, Temperature effects, Melting.

41-567
Arctic shipping. *Arctic news-record*, Apr. 1986, 5(1), p.17-29.
Marine transportation, Ice navigation, River ice, Ice detection, Safety, Rescue operations.

41-568
Research. *Arctic news-record*, Apr. 1986, 5(1), p.31-32.
Offshore structures, Ice loads, Ice conditions, Ice pressure, Climatic factors.

41-569
Alaska's mineral industry, 1985.
Bundtzen, T.K., et al, *Alaska. Division of Geological and Geophysical Surveys. Special report*, 1986, No.39, 68p., 33 refs.
Eakins, G.R., Green, C.B., Lueck, L.L.
Economic development, Minerals, Artificial islands, Frozen ground, Concrete structures, Sands, Gravel, Mining, Quarries, United States—Alaska.

41-570
Early results of the Rosie Creek Fire Research Project 1984.
Juday, G.P., ed, *Alaska. University. Agricultural and Forestry Experiment Station. Miscellaneous publication*, Dec. 1985, 85-2, 46p., Refs. passim. Includes 14 articles.
Dyrness, C.T., ed.
Forest fires, Taiga, Revegetation, Plants (botany), Research projects, Soil mechanics, Impact strength, United States—Alaska—Rosie Creek.

41-571
Seas of the Soviet Arctic. Vol.9. [Moria Sovetskoĭ Arktiki. Tom 9],
Gramberg, I.S., ed, Geologicheskoe stroenie SSSR i zakonomernosti razmeshcheniia poleznykh iskopaemykh. V desiati tomakh (Geological structure of the USSR and distribution of economic minerals. In 10 volumes) edited by E.A. Kozlovskii, Leningrad, Nedra, 1984, 280p., In Russian with English table of contents. 436 refs.
Pogrebitskiĭ, IU.E., ed.
Natural resources, Geophysical surveys, Minerals, Geological surveys, Offshore drilling, Geologic structures, Mapping, Maps, Tectonics, History, Stratigraphy, Sedimentation, Arctic Ocean.

41-572
Testing antilock systems: Winter tests 1985 for evaluation of draft revision of ECE Reg. 13, Annex 13. [Provning av antilassystem: Vinterprov 1985 för värdering av förslag till revision av ECE Reg 13, Annex 13],
Nordström, O., *Sweden. Statens väg- och trafikinstitut. Rapport*, 1986, No.304, 46p. + appends., In Swedish with English summary.
Brakes (motion arresters), Road icing, Vehicles, Cold weather performance, Tests.

41-573
Glaciological field work and remote sensing in connection with hydropower investigations, West Greenland.
Thomsen, H.H., *Denmark. Grönlands geologiske undersögelse. Rapport*, 1985, No.125, p.95-99, 9 refs.
Glacial hydrology, Glacier mass balance, Remote sensing, Drainage, Ice sheets, Markers, Greenland.

41-574
Estimation of runoff for proposed hydropower stations near Jakobshavn and Christianshåb, West Greenland.
Thomsen, H.H., et al, *Denmark. Grönlands geologiske undersögelse. Rapport*, 1985, No.125, p.100-103, 8 refs.
Braithwaite, R.J.
Runoff, Glacial hydrology, Stream flow, Glacier mass balance, Climatic factors, Electric power, Greenland.

41-575
Glaciological investigations in 1984 at Tasersiaq and Qapiarfiup sermia, West Greenland.
Olesen, O.B., *Denmark. Grönlands geologiske undersögelse. Rapport*, 1985, No.125, p.104-107.
Glacier mass balance, Meltwater, Snow accumulation, Snow hydrology, Glacial hydrology, Glacier oscillation, Snowmelt, Climatic factors, Ice growth, Stakes, Seasonal variations, Greenland.

41-576
Glacier-climate investigations in 1984 at Qamanârssûp sermia, West Greenland.
Braithwaite, R.J., *Denmark. Grönlands geologiske undersögelse. Rapport*, 1985, No.125, p.108-111, 12 refs.
Glacial hydrology, Glaciology, Glacier mass balance, Snow accumulation, Precipitation (meteorology), Climatic factors, Greenland.

41-577
Determination of ice thickness by magnetic methods at Nordbogletscher, South Greenland.
Thorning, L., *Denmark. Grönlands geologiske undersögelse Rapport*, 1985, No.125, p.112-114, 2 refs.
Glacier thickness, Magnetic surveys, Glacier beds, Glacial hydrology, Topographic features, Ice mechanics, Profiles, Greenland.

41-578
Pingos—a not so open and closed case.
Waddington, C.K., *Geoscope*, 1985, 15(2), p.30-52, With French summary. Refs. p.49-52.
Pingos, Permafrost physics, Heat transfer, Landforms, Subpermafrost ground water, Water pressure, Ice growth, Drainage, Lakes, Ground ice.

41-579
Fiber optics in adverse environments.
Lyons, P.B., ed, *Society of Photo-Optical Instrumentation Engineers. Proceedings*, Aug. 1981, Vol.296, 276p., Refs. passim. For selected papers see 41-580 through 41-583.
DLC TA1800.F532 1982
Cables (ropes), Optical properties, Temperature effects, Low temperature tests, Attenuation, X ray analysis, Minerals, Military research.

41-580
X-ray-induced transient attenuation at low temperatures in polymer clad silica (PCS) fibers.
Barnes, C.E., et al, *Society of Photo-Optical Instrumentation Engineers. Proceedings*, Aug 1981, Vol.296, p.25-34, 11 refs.
Wiczer, I.J.
Polymers, Cables (ropes), Low temperature tests, Fibers, X ray analysis, Attenuation, Water content, Temperature effects.

41-581
Response of irradiated optical waveguides at low temperatures.
Taylor, E.W., et al, *Society of Photo-Optical Instrumentation Engineers. Proceedings*, Aug. 1981, Vol.296, p.40-50, 6 refs.
Low temperature tests, Optical properties, Attenuation, Cables (ropes), Fibers, Temperature effects, Gamma irradiation, Minerals, Radiation.

41-582
Cold-induced losses in loose-sheath fiber-optic cables.
Holliday, V.M., et al, *Society of Photo-Optical Instrumentation Engineers. Proceedings*, Aug. 1981, Vol.296, p.77-79.
Gilbert, R.M.
Cables (ropes), Low temperature tests, Optical properties, Attenuation, Fibers, Temperature effects, Wave propagation, Light transmission.

41-583
Survivability of Army fiber optics systems.
Wichansky, H., et al, *Society of Photo-Optical Instrumentation Engineers. Proceedings*, Aug. 1981, Vol.296, p.110-117, 13 refs.
Dworkin, L.U., DiVita, S., Mondrick, A.
Cables (ropes), Optical properties, Military research, Temperature effects, Fibers, Minerals, Stresses, Tensile properties.

41-584
Hydrology and water chemistry of glacial meltwater and snowmelt streams in the Jotunheim, southern Norway.
Amos, J., *Swansea geographer*, 1985, Vol.22, p.52-60, 5 refs.
Glacial hydrology, Water chemistry, Meltwater, Snowmelt, Glacier melting, Diurnal variations, Seasonal variations, Glacial rivers, Temperature effects, Stream flow.

41-585
Moraine ridge deposition on Boverbreen glacial foreland.
Gallagher, J., *Swansea geographer*, 1985, Vol.22, p.61-73, 11 refs.
Glacial deposits, Moraines, Meltwater, Soil erosion, Paleoclimatology, Norway—Jotunheimen.

41-586
Nature of origin of earth hummocks, Breisterdalen, Jotunheimen/Norway.
Bolster, S.J.S., *Swansea geographer*, 1985, Vol.22, p.94-115, Refs. p.112-115.
Hummocks, Frost action, Frozen ground mechanics, Ice lenses, Landforms, Grain size, Norway—Jotunheimen.

41-587
Travelling in antarctic weather. [Viagem no tempo da Antártida],
Junqueira Villela, R., *Ciência hoje*, May-June 1986, 4(24), p.42-55, In Portuguese. 4 refs.
Meteorological data, Meteorological charts, Drake Passage, Antarctica—Ferraz Station, Antarctica—Bransfield Strait, Antarctica—South Shetland Islands.
The work presented here is part of studies of atmospheric processes carried out in 1982-1983 through the Brazilian program Proantar (Programa Antártico Brasileiro). The area investigated covers the Drake Passage, the Bransfield Strait, the South Shetland Is. and the west coast of the Antarctic Peninsula. A summary of meteorological observations carried out on board the *Besnard* south of latitude 60S is presented in a table. Based on satellite information received on board, statistics on the geographical distribution of cyclones are presented on charts giving trajectories of the polar front and showing pressure centers, wind velocity and direction, air temperature, snow occurrence, and positions of meteorological stations in the area.

41-588
Marginal and supraglacial lakes in Iceland.
Björnsson, H., *Jökull*, 1976, No.26, p.40-51, 33 refs.
Glacial lakes, Glacial rivers, Glacial hydrology, Stream flow, Glacier surfaces, Iceland.

41-589
Cause of Jökulhlaups in the Skaftá River, Vatnajökull.
Björnsson, H., *Jökull*, 1977, No.27, p.71-78, 10 refs.
Glacial rivers, Subglacial drainage, Glacial hydrology, Stream flow, Geothermy, Lake ice, Ice dams, Heat sources.

41-590
Grímsvötn geothermal area, Vatnajökull, Iceland.
Björnsson, H., et al, *Jökull*, 1984, No.34, p.25-50, Refs. p.46-48.
Kristmannsdóttir, H.
Glacial rivers, Glacial lakes, Glacial hydrology, Ice melting, Subglacial drainage, Geothermy, Lake ice, Chemical analysis, Water chemistry, Heat balance, Mass balance, Iceland.

41-591
Use of deuterium to trace the origin of drifting sea ice.
Árnason, B., *Marine Research Institute, Reykjavik. Journal*, 1985, Vol.9, Nordic Symposium, Reykjavik, Iceland, Aug. 29-Sep. 1, 1984. Proceedings, p.85-89, 6 refs.
Drift, Sea ice, Isotopes, Ice composition, Water chemistry, Ice salinity.

41-592
Sea ice melt water, a source of alkalinity, calcium and sulfate? Results from the CESAR ice station.
Anderson, L.G., et al, *Marine Research Institute, Reykjavik. Journal*, 1985, Vol.9, Nordic Symposium, Reykjavik, Iceland, Aug. 29-Sep. 1, 1984. Proceedings, p.90-96, 13 refs.
Jones, P.
Meltwater, Sea ice, Ice composition, Water chemistry, Chemical composition, Salinity, Temperature effects, Sea water.

41-593
Resilient modulus of freeze-thaw affected granular soils for pavement design and evaluation. Part 1. Laboratory tests on soils from Winchendon, Massachusetts, test sections.
Cole, D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1986, CR 86-04, 70p., ADA-171 541, 15 refs.
Bentley, D., Durell, G., Johnson, T.
Roads, Frozen ground strength, Freeze thaw cycles, Ground thawing, Pavements, Soil strength, Subgrade soils, Loads (forces), Unfrozen water content, Stresses, Soil water.
This work is the first of a series of four reports about laboratory and field testing of various granular road and airfield subgrades. This report details the acquisition, testing and analysis of six soils from a test site in Winchendon, Massachusetts. Repeat load triaxial tests were done on frozen and thawed soils to characterize the variations in their resilient properties throughout the seasons. Linear regression yielded empirical equations relating the resilient modulus to applied stress, unfrozen water content (for frozen soils), moisture tension (for thawed soils) and density. Equipment and test procedures (given in detail) were developed that allowed simulation in the laboratory of the gradual recovery of stiffness that occurs in the field after thawing. The resilient moduli were strongly dependent on soil state, dropping at least two orders of magnitude upon thawing.

41-594
Short-pulse radar investigations of freshwater ice sheets and brash ice.
Arcone, S.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1986, CR 86-06, 10p., ADA-172 578, 5 refs.
Delaney, A.J., Perham, R.E.
Ice cover thickness, Radar echoes, Lake ice, Ice sheets, Antennas.
Short-pulse radar profiles and waveform traces were recorded over natural, freshwater ice sheets and an artificially made, 1.6-m-diameter column of brash ice. The purpose was to study the feasibility of this type of radar to detect ice thickness, determine ice properties and distinguish ice forms. The radar utilized two antennas: one with a spectrum centered near 900 MHz and a second more powerful one near 700 MHz. Distinct top and bottom reflections from several ice sheets were produced by both antennas, but the value of dielectric permittivity calculated from the time delay of the reflections varied between sheets as one ice sheet was ready to candle and contained free water. The brash ice distorted signals and allowed no discernible bottom return.

41-595
Applications of the finite-element method to the problem of heat transfer in a freezing shaft wall.
Liandi, F., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1986, CR 86-08, 24p., ADA-172 552, 12 refs.
Soil freezing, Shafts (excavations), Heat transfer, Tunnels, Walls, Latent heat, Heat capacity, Analysis (mathematics).
In this work, numerical computations of heat transfer for freezing a shaft wall have been conducted. Both fixed mesh and deforming mesh finite-element methods are used. In the fixed mesh method, latent heat effects are accounted for through a *delta* function in the apparent heat capacity. In the deforming mesh method, an automatic mesh-generation technique with transfinite mappings is used, and in this method two different approaches are taken to evaluate the movement of the interface. The freeze-pipes are considered as point sources with irregular distribution. The advancement of the inner and outer boundaries of the frozen wall is found to be in agreement with the previously computed results.

41-596
Drilling mud usage and discharge in arctic marine waters north of 60 deg for the period 1978-1982.
Evance, T.B., comp, Yellowknife, NWT, Canada, Indian and Northern Affairs, Water Resources Division, June 1985, 6p. + appends.
Milburn, D., comp.
Drilling fluids, Waste disposal, Ocean environments, Offshore drilling, Exploration, Hydrocarbons, Chemical analysis, Arctic Ocean.

41-597
Summary report: drilling fluid use and waste discharge in arctic marine waters north of 60 deg for 1983.
Milburn, D., et al, Yellowknife, NWT, Canada, Indian and Northern Affairs, Water Resources Division, Jan. 1986, 38p.
Edwards, D.L.S.
Drilling fluids, Waste disposal, Ocean environments, Offshore drilling, Hydrocarbons, Exploration, Chemical analysis, Arctic Ocean.

41-598
Summary report: drilling fluid use and waste discharge in arctic marine waters north of 60 deg for 1984.
Milburn, D., et al, Yellowknife, NWT, Canada, Indian and Northern Affairs, Water Resources Division, July 1986, 47p., 5 refs.
Edwards, D.L.S.
Drilling fluids, Waste disposal, Ocean environments, Offshore drilling, Hydrocarbons, Exploration, Chemical analysis, Arctic Ocean.

41-599
Scheme for predicting flood runoff for unstudied rivers of Eastern Siberia. [Skhema prognoza pavodochnogo stoka dlia neizuchennykh rek Vostochnoĭ Sibiri],
Petenkov, A.V., *Vodnye resursy*, Sep.-Oct. 1986, No.5, p.37-45, In Russian. 16 refs.
River basins, Cryogenic soils, Mountain soils, Permafrost beneath rivers, Snowmelt, Snow water equivalent, Taiga, Runoff, Forecasting, Alpine tundra, USSR—Yenisey River.

41-600
Regularities governing thermophysical properties of peat in the Tiumen' region. [Zakonomernosti izmeneniia teplofizicheskikh svoĭstv torfov Tiumenskoĭ oblasti],
Danielian, IU.S., et al, *Inzhenernaia geologiia*, July-Aug. 1986, No.4, p.46-52, In Russian. 8 refs.
Zaĭtsev, V.S., Gamaiunova, L.V.
Peat, Paludification, Taiga, Thermal properties, Permafrost distribution, Permafrost depth, Physical properties.

41-601
Reaction of loess soils with hydrofluosilicic acid and carbamide resins. [Vzaimodeĭstvie lessovogo grunta s kremneftoristovodorodnoĭ kislotoĭ i karbamidnoĭ smoloĭ],
Zgadzaĭ, L.K., et al, *Inzhenernaia geologiia*, July-Aug. 1986, No.4, p.53-57, In Russian. 11 refs.
Kuleev, M.T., Khabibullina, E.N.
Soil stabilization, Cements, Loess, Resins.

41-602
Engineering-geological observation polygons for studies and control of human factors impact on the development of exogenic processes. [O nabliudatel'nykh inzhenerno-geologicheskikh poligonakh po izucheniiu i kontroliu vliianiia tekhnogennykh faktorov na razvitie ekzogennykh protsessov].
Niiazov, R.A., *Inzhenernaia geologiia*, July-Aug. 1986, No.4, p.70-79, In Russian. 6 refs.
Slope processes, Mudflows, Avalanches, Monitoring, Alpine landscapes, Measuring instruments, Snow melting, Floods.

41-603
Impulse method of describing non-equilibrium cryogenic physical-geological processes. [Metod impul'sa pri opisanii neravnovesnykh kriogennykh fiziko-geologicheskikh protsessov].
Koval'kov, V.P., *Inzhenernaia geologiia*, July-Aug. 1986, No.4, p.101-115, In Russian. 13 refs.
Frozen ground thermodynamics, Soil freezing, Frost penetration, Freeze thaw cycles, Analysis (mathematics).

41-604
Properties of slag concrete. [Kuonabetonin ominaisuudet].
Ruohomäki, J., et al, *Finland. Technical Research Centre. Research reports*, 1986, No.395, 43p., In Finnish with English summary. 8 refs.
Hakkarainen, T., Pyy, H.
Concrete strength, Frost resistance, Reinforced concretes, Corrosion, Salting, Microstructure, Cement admixtures, Tests.

41-605
Radar digitization, conversion and analysis of an ice hazard detection/collision avoidance system.
Harvey, M.J., et al, *Transport Canada. Report*, Dec. 1984, TP 6068, 17p., In English and French.
Ryan, J.P., White, D.C.
Icebergs, Ice detection, Radar echoes, Data processing.

41-606
Glaciological and climatological investigations of the North Water polynya in northern Baffin Bay.
Muller, F., et al, Montreal, McGill University, [1976], 128p., North Water Project. Progress report 1 October 1975 to 30 September 1976.
Polynyas, Sea ice distribution, Ice formation, Heat balance, Meltwater, Remote sensing, Glacier melting, Solar radiation.

41-607
Moving boundary—moving mesh analysis of phase change using finite elements with transfinite mappings.
Albert, M.R., et al, *International journal for numerical methods in engineering*, Apr. 1986, 23(4), MP 2159, p.591-607, 27 refs.
O'Neill, K.
Boundary layer, Phase transformations, Freezing, Analysis (mathematics), Temperature effects, Latent heat, Models.
Two-dimensional heat conduction phase change problems are solved using a moving boundary-moving mesh approach. A transfinite mapping technique successfully controls interior mesh motion, and numerical results compare well with analytical solutions. Calculations also agree well with two-dimensional laboratory data for cases featuring time-dependent boundary conditions.

41-608
Natural convection in sloping porous layers.
Powers, D.J., et al, MP 2158, International Conference on Finite Elements in Water resources, 6th, Lisboa, Portugal, June 1986. Proceedings. Edited by A. Sá da Costa, et al, Berlin, Computational Mechanics Publication, [1986], p.697-710, 11 refs.
O'Neill, K.
Porous materials, Heat transfer, Convection, Fluid flow, Heating, Slope orientation, Analysis (mathematics), Saturation.
2-D finite difference simulations of natural convection in a laterally confined, saturated porous medium show distinctive cell patterns and heat transfer characteristics when the medium is inclined relative to the horizontal. A perfectly horizontal layer heated from below exhibits the classical Benard type convection cells, while a vertical medium heated on one side forms a single Rayleigh cell. Progressing from the horizontal to the vertical one sees an evolution of cell forms, each typically featuring a pattern of cell types which alternate longitudinally along the slope. Benard cells rotating in harmony with the Rayleigh forces grow, eventually consuming their weakened counter-rotating neighbors. The latter gradually diminish to the status of transition cells between the dominant types which flank them. Identifiable transitions in flow configuration and cell morphology cause dramatic changes in the efficiency of transverse heat transfer through the layer. These changes have previously been interpreted only as scatter in experimental data.

41-609
Investigation of seasonal load restrictions in Washington State.
Mahoney, J.P., et al, *Transportation research record*, 1985, No.1043, p.58-67, For another issuance see 39-1321. 6 refs.
Lary, J.A., Sharma, J., Jackson, N.
Pavements, Loads (forces), Frost penetration, Freezing indexes, Deformation, Subgrade soils, Measuring instruments, Seasonal variations, Water content, Temperature effects.

41-610
Stable isotope stratigraphy of ice cores and the age of the last eruption at Mount Melbourne, Antarctica.
Lyon, G.L., *New Zealand journal of geology and geophysics*, 1986, 29(1), p.135-138, 18 refs.
Ice cores, Isotopes, Snow accumulation, Volcanic ash, Ice composition, Antarctica—Victoria Land.
Deuterium-hydrogen analysis of two snow profiles on Mount Melbourne and the Campbell Glacier, northern Victoria Land, indicate snow accumulation rates of 0.5-2.2 m/a. From the depth of burial of ash layers in ice cliffs at Mt. Melbourne it is estimated that the last major eruption was between 1862 and 1922. (Auth.)

41-611
Global ice-sheet system interlocked by sea level.
Denton, G.H., et al, *Quaternary research*, July 1986, 26(1), p.3-26, Refs. p.24-26.
Hughes, T.J., Karlén, W.
Ice sheets, Glaciation, Carbon dioxide, Climatic factors, Paleoclimatology, Sea level.
Recent atmospheric modeling results suggest that factors other than areal changes of the grounded antarctic ice sheet strongly influenced Southern Hemisphere climate and terminated the last ice age simultaneously in both polar hemispheres. Atmospheric carbon dioxide linked to high-latitude oceans is the most likely candidate, but another potential influence was high-frequency climatic oscillations (2500 yr). It is postulated that variations in atmospheric carbon dioxide acted through an antarctic ice shelf linked to the grounded ice sheet to produce and terminate Southern Hemisphere ice-age climate. Combined melting and consequent sea-level rise from the three warming factors initiated irreversible collapse of the interlocked global ice-sheet system, which was at its largest but most vulnerable configuration. (Auth. mod.)

41-612
Ross Ice Shelf oxygen isotopes and west antarctic climate history.
Grootes, P.M., et al, *Quaternary research*, July 1986, 26(1), p.49-67, Refs. p.65-67.
Stuiver, M.
Ice shelves, Ice crystals, Ice composition, Paleoclimatology, Climatic changes, Oxygen isotopes, Antarctica—Ross Ice Shelf.
The Ross Ice Shelf *delta* O-18 profile at station J-9 covers at least 30,000 yr. It identifies the depth in the core of ice from the last glacial-interglacial transition (266 to 286 m) and the 1000-m surface elevation (about 140 m). Various processes contribute to the *delta* O-18 change observed in the core: climatic warming, mainly caused by a decrease in winter sea ice extent around Antarctica of about 6 deg latitude early in the glacial-interglacial transition, decreasing ice sheet thickness later in the glacial-interglacial transition and during the Holocene, and decreases in elevation and effective distance from the open ocean as the source of the ice in the core shifts along the flow line toward J-9. Average *delta* O-18 values of the last 3000 yr imply a fairly stable climate. Yet shorter (100 to 1,000 yr) *delta* O-18 climatic oscillations up to 6‰ are seen in both the Holocene and the glacial portion of the record. (Auth.)

41-613
Sources of organic nitrogen, phosphorus and carbon in antarctic streams.
Downes, M.T., et al, *Hydrobiologia*, Mar. 30, 1986, 134(3), p.215-225, 21 refs.
Howard-Williams, C., Vincent, W.F.
Limnology, Meltwater, Glacier melting, Streams, Snow composition, Antarctica—McMurdo Sound.
Dissolved and particulate organic materials were analyzed in 14 streamwaters of the McMurdo Sound region of Antarctica. These streams are fed by glacial meltwaters and pass through catchments largely devoid of terrestrial vegetation. Nonetheless they contained measurable amounts of organic material in both dissolved and particulate form. Most of the dissolved organic carbon (DOC) values lay in the range 1-3 g C/cu m. Higher values were recorded close to penguin rookeries on the coast. Five sources of organic matter were identified: birdlife, autochthonous algal production, lacustrine and marine sediments, snowfall and the underlying bedrock of sedimentary origin. Highest organic levels were recorded in the first melt down the glacier face, suggesting that winter deposition of organic materials may be especially important. (Auth. mod.)

41-614
Lipids of the antarctic sea ice diatom *Nitzschia cylindrus*.
Nichols, P.D., et al, *Phytochemistry*, 1986, 25(7), p.1649-1653, 42 refs.
Palmisano, A.C., Smith, G.A., White, D.C.
Sea ice, Microbiology, Algae, Antarctica—McMurdo Sound.
The sterol and neutral, glyco- and phospholipid fatty acid profiles of the sea ice diatom *Nitzschia cylindrus*, isolated from McMurdo Sound, are reported. Two sterols were detected, *trans*-22-dehydrocholesterol (66%) of total sterols) and cholesterol (34%); no sterols containing alkyl groups at the C24 position were present. The major fatty acids in *N. cylindrus* were typical of previous reports of diatom fatty acids. A number of long-chain monounsaturated fatty acids were also detected, with higher relative proportions present in the phospholipid fraction. The distribution of these fatty acids suggests that chain elongation of monounsaturated fatty acids was occurring in *N. cylindrus*. The proposed chain lengthening occurring for *N. cylindrus* represents, to our knowledge, the first report of possible chain lengthening of monounsaturated fatty acids in microscopic algae. These features, the presence of long-chain monounsaturated fatty acids and the sterol profile, may allow the input of this alga into benthic marine sediments or food webs to be monitored. (Auth. mod.)

41-615
Permafrost and ice-wedge growth.
Worsley, P., *Nature*, Aug. 21-27, 1986, 322(6081), p.683-684.
Permafrost physics, Ice wedges, Isotope analysis, Ice growth, Climatic changes, Ice melting, Paleoclimatology.

41-616
Melting history of Antarctica during the past 60,000 years.
Labeyrie, L.D., et al, *Nature*, Aug. 21-27, 1986, 322(6081), p.701-706, 49 refs.
Ice shelves, Glacial erosion, Paleoclimatology, Ice melting, Paleoecology, Icebergs, Algae, Bottom sediment.
Marked changes in the surface-water hydrology of the southern ocean during the past 60 kyr are revealed by a detailed comparison of the oxygen isotopic composition of planktonic and benthic foraminifera from sediment cores and the surface-water temperature estimated by a transfer function derived from the distribution of diatoms in the same sediments. From 35 to 17 kyr BP, the southern ocean polar front was covered by a melt-water lid containing a significant contribution from melting icebergs, calved from antarctic ice shelves. These icebergs may have originated from a succession of surges of the ice shelves. (Auth.)

41-617
Repulsive regularities of water structure in ices and crystalline hydrates.
Savage, H.F., et al, *Nature*, Aug. 21-27, 1986, 322(6081), p.717-720, 10 refs.
Finney, J.L.
Ice structure, Hydrogen bonds, Hydrates.

41-618
Dating ice-wedge growth in subarctic peatlands following deforestation.
Payette, S., et al, *Nature*, Aug. 21-27, 1986, 322(6081), p.724-727, 20 refs.
Gauthier, L., Grenier, I.
Ice wedges, Ice growth, Ice dating, Peat, Forestry, Temperature effects, Subpolar regions, Landforms.

41-619
Hydromechanization in construction of electric power plants. [Gidro-mekhanizatsiia v energeticheskom stroitel'stve].
Shkundin, B.M., Moscow, Energoatomizdat, 1986, 224p. (pertinent p.156-174), In Russian with abridged English table of contents enclosed. 66 refs.
Earthwork, Electric power, Earth fills, Industrial buildings, Dredging, Construction equipment, Cold weather construction, Environmental protection, Foundations.

41-620
Loess deposits of the USSR. [Lessovye porody SSSR].
Sergeev, E.M., ed, Moscow, Nedra, 1986, 2 volumes (only Vol.2 pertinent), In Russian with abridged English table of contents enclosed. 73 refs.
Loess, Soil formation, Engineering geology, Soil composition, Hydraulic structures, Soil compaction, Environmental protection, Permafrost structure, Ground ice, Origin, Physical properties, Geography, Distribution.

41-621
Calculation of degree-days for glacier-climate research.
Braithwaite, R.J., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.1-8, With German summary. 15 refs.
Glacier ablation, Degree days, Climatic factors, Air temperature, Seasonal variations, Statistical analysis.

41-622
Ice avalanches and a landslide on Grosser Aletschgletscher.
Alean, J., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.9-25. With German and French summaries. 17 refs.
Ice mechanics, Avalanche formation, Landslides, Glacier ablation, Firn, Slope orientation, Switzerland—Aletschgletscher.

41-623
Physico-chemical characteristics of the runoff from rock glaciers in the southern Alps of France. [Caractéristiques physico-chimiques des eaux issues des glaciers rocheux des Alpes du Sud (France)].
Evin, M., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.27-40. In French with German and English summaries. 6 refs.
Runoff, Glacial hydrology, Rock glaciers, Chemical analysis, France—Alps.

41-624
Accuracy of pH determination in glacial melt-waters.
Metcalf, R.C., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.41-51. With German summary. 33 refs.
Meltwater, Glacier melting, Water chemistry, Solutions, Ions, Snowmelt, Ice melting.

41-625
Relative dating of Neoglacial moraine ridges in North Norway.
Innes, J.L., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.53-63. With German summary. 21 refs.
Moraines, Soil dating, Weathering, Paleoclimatology, Age determination, Glacier oscillation, Lichens, Norway.

41-626
Growth mechanisms in aggradation palsas.
Outcalt, S.I., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.65-78. With German summary. 22 refs.
Nelson, F.
Frost mounds, Permafrost physics, Structural analysis, Frozen ground mechanics, Ground ice, Models, Origin, Age determination, Buoyancy, United States—Alaska—Sukakpak Mountain.

41-627
Shallow groundwater fluctuations in unstable hillslopes of coastal Alaska.
Sidle, R.C., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.79-95. With German summary. Refs. p.93-95.
Ground water, Water pressure, Snowmelt, Shore erosion, Climatic factors, Slopes, Rain, Storms, Snowfall.

41-628
Sensor for monitoring the dielectric constant of snow. [Ein Sensor zur Messung der Dielektrizitätskonstante von Schnee].
Mätzler, C., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.97-105. In German with English summary. 7 refs.
Snow electrical properties, Snow water content, Dielectric properties, Unfrozen water content, Measuring instruments, Tests.

41-629
Numerical experiments on large-scale glacial erosion.
Oerlemans, J., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.107-126. With German summary. 22 refs.
Glacial erosion, Geomorphology, Glacier flow, Ice mechanics, Air temperature, Glacier mass balance, Velocity, Mountain glaciers, Ice sheets, Valleys.

41-630
Climatic variation and runoff from Alpine glaciers.
Collins, D.N., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.127-145. With German summary. 24 refs.
Glacial rivers, Runoff, Climatic changes, Mountain glaciers, Glacial hydrology, Seasonal variations, Air temperature.

41-631
Arctic ice shelf growth, fiord oceanography and climate.
Jeffries, M.O., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.147-153. With German summary. 20 refs.
Krouse, H.R.
Sea ice, Ice salinity, Ice composition, Climatic changes, Oceanography, Ice shelves, Ice growth, Marine meteorology, Ice cover thickness, Paleoclimatology, Radioactive age determination, Canada—Northwest Territories—Ellesmere Island.

41-632
Ice ablation in West Greenland in relation to air temperature and global radiation.
Braithwaite, R.J., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.155-168. With German summary. 19 refs.
Olesen, O.B.
Glacier ablation, Solar radiation, Air temperature, Degree days, Heat flux, Variations, Latent heat, Greenland.

41-633
Evaluation of strain rate measurements on a 20 m deep firn pit, applying a Newtonian model (Kesselwandferner, Ötztal Alps, 1967-1978).
Eisner, H., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.169-176. With German summary. 13 refs.
Ambach, W., Schneider, H.
Firn, Strain tests, Snow loads, Boreholes, Deformation, Mountains, Viscosity, Stresses, Analysis (mathematics), Austria—Ötztal Alps.

41-634
Explanatory text to the map of Lewis Glacier, Mount Kenya, 1983. [Der Lewis-Gletscher, Mount Kenya; Begleitworte zur Gletscherkarte 1983].
Patzelt, G., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.177-195. In German with English summary. 21 refs.
Schneider, E., Moser, G.
Mountain glaciers, Glacier flow, Glacier tongues, Photogrammetric surveys, Ice volume, Mapping, Variations, Kenya—Lewis Glacier.

41-635
Deflation and nival eolian phenomena observed under conditions of congelation in the forefield of the Werenskiold Glacier (SW Spitsbergen).
Migala, K., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.197-206. With German summary. 19 refs.
Sobik, M.
Glacial lakes, Lacustrine deposits, Soil freezing, Wind erosion, Snow cover effect, Ice sublimation, Eolian soils, Dust, Norway—Spitsbergen.

41-636
Glaciers of the Austrian Alps, 1983/84. [Die Gletscher der österreichischen Alpen 1983/84].
Patzelt, G., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.207-221, In German.
Glacier oscillation, Glacier tongues, Mountain glaciers, Snowfall, Seasonal variations, Statistical analysis, Variations, Distribution, Austria—Alps.

41-637
Follow-up measurements of Pasterze (Glockner group) in 1984. [Nachmessungen im Bereich der Pasterze (Glocknergruppe) im Jahre 1984].
Wakonigg, H., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1984, Vol.20, p.223-228, In German.
Glacier oscillation, Snow accumulation, Firn, Glacier flow, Glacier mass balance, Distribution, Austria—Pasterze.

41-638
Vehicular transport at McMurdo Station, Antarctica.
Dibbern, J.S., *U.S. Army Foreign Science and Technology Center. Letter report*, May 9, 1986, AST-1150R-100-86, 31p.
Engines, Air cushion vehicles, Snow vehicles, Tracked vehicles, Vehicle wheels, Sea ice, Equipment, Winter maintenance, Antarctica—McMurdo Sound.
This report addresses the use of transport vehicles in and around McMurdo Sound. It contains recommendations for the replacement of the present generation of vehicles and a series of suggestions on how to improve or expand transport services using new categories or types of vehicles. It is pointed out that some replacement vehicles may not be ideal but for reasons such as cost and availability may be the best compromise. Alternative selections are made in some cases with supporting criteria. The vehicles discussed include light wheeled vehicles, heavy wheeled vehicles, snowmobiles, light and heavy tracked vehicles, and air cushion vehicles. Recommendations include the existing equipment upgrade and maintenance

41-639
Research on transportation facilities in cold regions.
Andersland, O.B., ed, New York, American Society of Civil Engineers, 1986, 105p., Proceedings of a session sponsored by the Technical Council on Cold Regions Engineering in conjunction with the ASCE Convention in Boston, MA, Oct. 27, 1986. Refs. passim. For individual papers see 41-640 through 41-645.
Sayles, F.H., ed.
Cold weather operation, Transportation, Pipelines, Freeze thaw cycles, Ice loads, Surface temperature, Frost heave, Bridges, Frost resistance, Engineering.

41-640
Influence of surface conditions on surface temperature.
Kinney, T.C., et al, Research on transportation facilities in cold regions. Edited by O.B. Andersland and F.H. Sayles, New York, American Society of Civil Engineers, 1986, p.1-15, 11 refs.
Baldassari, D.
Discontinuous permafrost, Surface temperature, Surface properties, Engineering, Active layer, Settlement (structural), Ground thawing, Thermal regime, Tests, Soil temperature, United States—Alaska—Fairbanks.

41-641
Assessment of freeze-thaw damage in cement stabilised soils.
Kettle, R.J., Research on transportation facilities in cold regions. Edited by O.B. Andersland and F.H. Sayles, New York, American Society of Civil Engineers, 1986, p.16-31, 19 refs.
Cements, Freeze thaw cycles, Soil stabilization, Pavements, Soil strength, Damage, Soil cement, Tests.

41-642
Winter highway construction.
Bennett, F.L., Research on transportation facilities in cold regions. Edited by O.B. Andersland and F.H. Sayles, New York, American Society of Civil Engineers, 1986, p.32-46, Refs. p.44-46.
Cold weather construction, Roads, Frozen ground, Climatic factors, Earthwork, Winter concreting, Excavation.

41-643
Structural monitoring concepts for arctic pipelines.
Nyman, K.J., et al, Research on transportation facilities in cold regions. Edited by O.B. Andersland and F.H. Sayles, New York, American Society of Civil Engineers, 1986, p.47-66, 38 refs.
Lara, P.
Cold weather construction, Soil mechanics, Freeze thaw cycles, Frost heave, Settlement (structural), Monitors, Design, Strains.

41-644
Pipeline frost heave predictions using a 2-D thermal model.
Nixon, J.F., Research on transportation facilities in cold regions. Edited by O.B. Andersland and F.H. Sayles, New York, American Society of Civil Engineers, 1986, p.67-82, 13 refs.
Pipelines, Frost heave, Ice lenses, Frozen ground physics, Soil water, Forecasting, Models, Temperature effects, Unfrozen water content.

41-645
Ice forces on bridge piers.
Haynes, F.D., MP 2160, Research on transportation facilities in cold regions. Edited by O.B. Andersland and F.H. Sayles, New York, American Society of Civil Engineers, 1986, p.83-101, Refs. p.99-101.
Ice loads, Piers, Bridges, Ice physics, Ice strength, Ice deformation, Ice cracks, Design, Impact strength, Models.
The force that river ice exerts on bridge piers has been studied in the field and with models in the laboratory. Ice forces are a function of the strength, thickness, failure mode and velocity of the ice, the ice-structure interaction and the geometry of the structure. Results of field measurements on the Yukon and Ottauquechee Rivers are discussed. Results of laboratory tests on vertical structures and sloping structures are presented. Ice failure in crushing, bending (both up and down) and splitting has been observed in the laboratory and the ice forces associated with each mode are presented. A discussion of the measured ice forces with regard to the existing design codes is given.

41-646
Spray-ice islands evaluated for Arctic-drilling structures.
Juvkam-Wold, H.C., *Oil and gas journal*, Apr. 21, 1986, 84(16), p.57-66, 13 refs.
Ice islands, Artificial islands, Offshore structures, Sea spray, Spray freezing, Offshore drilling, Beaufort Sea.

41-647
Fatigue and freeze-thaw resistance of epoxy mortar.
Biswas, M., et al, *Transportation research record*, 1985, No.1041, p.33-37, 2 refs.
Ghattas, O.N., Vladimirou, H.
Mortars, Freeze thaw cycles, Fatigue (materials), Frost resistance, Moisture, Tests.

41-648
Snow and ice.
Morris, E.M., Hydrological forecasting. Edited by M.G. Anderson and T.P. Burt, New York, John Wiley & Sons, 1985, p.153-182, Refs. p.179-182.
Snow hydrology, Ice conditions, Ice melting, Snowfall, Forecasting, Mathemaical models, Stream flow, Hydrology.

41-649
Seventh continent; Antarctica in a resource age.
Shapley, D., Washington, D.C., Resources for the Future, Inc., 1985, 315p., Refs. p.273-299.
DLC JX084.A5S53
Environmental impact, Research projects, Natural resources, International cooperation, Antarctica.
The purpose of this book is to present a comprehensive picture of the role of Antarctica in world affairs today: there is growing international interest in Antarctica's resource potential; many more nations and organizations - developing nations, public interest groups, the environmental movement - are demanding a say in the region's administration; a debate on Antarctica is under way at the the United Nations; only six years remain until 1991, the earliest date on which a review may be called of the 1961 Antarctic Treaty. Chapter 1 is a brief description of the region's geography and history and outlines the issues. The chapters which follow, 2 through 8, each take up a specific aspect of the antarctic question: the history of U.S. ties to the region; the political evolution of the region and the web of political understandings that underpin the treaty; the living and minerals resource issues; the story of the United States in Antarctica; relating our domestic science program to this evolving international political scene and policy options for the future; the interests of Malaysia, India, and other developing countries now asking for a voice in antarctic governance; the role of the United Nations and the choices the international community faces. A reprint of the Antarctic Treaty is appended, as is the Convention on the Conservation of Antarctic Marine Living Resources.

41-650
Reducing the amount of cement and fuel used in the production of prefabricated reinforced concrete. [Snizhenie raskhoda tsementa i topliva v proizvodstve sbornogo zhelezobetona],
Dvorkin, L.I., Kiev, Vishcha shkola, 1985, 99p. (Pertinent p.50-69), In Russian with abridged English table of contents enclosed. 23 refs.
Reinforced concretes, Prefabrication, Cements, Frost resistance, Concrete admixtures, Antifreezes, Air entrainment.

41-651
Avalanches and avalanche snow loads. [Laviny i lavinnye nagruzki],
Moskalev, IU.D., *Sredneaziatskŭ regional'nyĭ nauchno-issledovatel'skĭ institut. Trudy*, 1986, Vol.109, 157p., In Russian with abridged English table of contents enclosed. 58 refs.
Snow cover stability, Avalanche engineering, Snow loads, Snow surveys, Mapping, Avalanche mechanics, Impact strength, Avalanche formation, Countermeasures, Avalanche forecasting.

41-652
Heliogeophysics and the control of natural environments. [Voprosy geliogeofiziki i kontrolia prirodnoĭ sredy],
Danilova, A.D., ed, Moscow, Gidrometeoizdat, 1986, 192p., In Russian. For selected paper see 41-653. 3 refs.
Nazarova, I.M., ed.
Industrial buildings, Air pollution, Snow cover distribution, Snow composition, Environmental impact, Statistical analysis.

41-653
Statistical method of separating the background component of snow pollution near industrial sources. [Statisticheskiĭ sposob vydeleniia fonovoĭ komponenty zagriazneniia snega vblizi promyshlennykh istochnikov],
Kerbi, S.B., et al, Voprosy geliogeofiziki i kontrolia prirodnoĭ sredy (Heliogeophysics and the control of natural environments) edited by A.D. Danilova and I.M. Nazarova, Moscow, Gidrometeoizdat, 1986, p.119-123, In Russian. 3 refs.
Fadeev, N.N.
Industrial buildings, Air pollution, Snow cover distribution, Snow composition, Environmental impact, Statistical analysis.

41-654
Potential for use of natural brines in highway applications.
Sack, W.A., et al, *Transportation research record*, 1985, No.1019, p.1-8, 20 refs.
Eck, R.W.
Chemical ice prevention, Road icing, Winter maintenance, Road maintenance, Wastes, Dust, Tests.

41-655
Calcium magnesium acetate research in Washington State.
Ernst, D.D., et al, *Transportation research record*, 1985, No.1019, p.8-12.
Demich, G., Wieman, T.
Chemical ice prevention, Road icing, Winter maintenance, Road maintenance, Ice melting, Snowmelt, Dust, Salting, Urea, Tests.

41-656
Staffing of maintenance crews during winter months.
Rissel, M.C., et al, *Transportation research record*, 1985, No.1019, p.12-21.
Scott, D.G.
Cold weather performance, Winter maintenance, Road maintenance, Labor factors, Climatic factors, Computer applications, Road icing, Snow accumulation.

41-657
Transient two-dimensional phase change with convection, using deforming finite elements.
Albert, M.R., et al, MP 2162, Computational techniques in heat transfer. Edited by R.W. Lewis, et al, Swansea, England, Pineridge Press, Ltd., 1985, p.229-243, 15 refs.
O'Neill, K.
Heat transfer, Phase transformations, Freezeup, Pipes (tubes), Boundary layer, Convection, Flow rate, Analysis (mathematics).

41-658
Applications of control volume enthalpy methods in the solution of Stefan problems.
Voller, V.R., et al, Computational techniques in heat transfer. Edited by R.W. Lewis and M. Cross, Swansea, England, Pineridge Press, Ltd., 1985, p.245-275, 51 refs.
Cross, M.
Heat transfer, Mass transfer, Freeze thaw cycles, Stefan problem, Phase transformations, Enthalpy, Analysis (mathematics).

41-659
Use of transfinite mappings with finite elements on a moving mesh for two-dimensional phase change.
Albert, M.R., et al, MP 2161, Adaptive computational methods for partial differential equations. Edited by I. Babuska, Philadelphia, Society for Industrial and Applied Mathematics, 1983, p.85-110, 15 refs.
O'Neill, K.
Phase transformations, Freezing, Heat transfer, Stefan problem, Boundary layer, Computer applications, Temperature effects, Analysis (mathematics), Models.
The transfinite mapping technique of automatic mesh generation is used with finite elements to solve for two-dimensional heat conduction phase change on a moving mesh. The governing equation is transformed to account for mesh motion, so that coefficients remain attached to moving nodes. The energy conserving attachment of mesh boundaries to phase boundaries avoids approximation across surfaces of discontinuity, and facilitates application of a physical jump condition there. That condition drives boundary motion, while evolution of the interior mesh is determined from boundary node motion via the transfinite mappings. Analytical and computed solutions compare well for the problem of freezing in a corner. Some limitations of both the mapping scheme and this moving finite element system are identified. In conjunction with the latter, a Von Neumann type analysis of the governing equation is outlined, and approximate relations are developed between Stefan number and a numerical Peclet number based on mesh velocity.

41-660
Non-metallic optical fiber cable for use under low temperature.
Ogai, M., et al, European Conference on Optical Communication, 7th, Copenhagen, Sep. 8-11, 1981. Proceedings, Stevenage, England, Peter Peregrinus, Ltd., 1981, p.12(2-1)-12(2-4).
Omae, K., Higashimoto, M., Ishida, Y.
Optical properties, Low temperature tests, Fiber optics, Transmission, Design criteria, Strains, Coatings, Temperature effects.

41-661
Optical cable properties under frozen water in a conduit and a suitable method for prevention of the degradation.
Tanaka, M., et al, European Conference on Optical Communication, 7th, Copenhagen, Sep. 8-11, 1981. Proceedings, Stevenage, England, Peter Peregrinus, Ltd, 1981, p.22(1)-22(4).
Freezing, Water temperature, Pipes (tubes), Fiber optics, Deformation, Optical properties, Transmission, Pressure.

41-662
Description of the building materials data base for Portland, Maine.
Merry, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1986, SR 86-13, 83p., ADA-172 633, 12 refs.
LaPotin, P.J.
Construction materials, Precipitation (meteorology), Chemical analysis, Environmental protection, Buildings, Damage, Statistical analysis, Computer applications, United States—Maine—Portland.
A building materials sampling program for the Portland, Maine, region was conducted in July and August 1984 to examine the types and amounts of building surface materials exposed to acid deposition. The stratified, systematic, unaligned random sampling approach was used to generate sample points across the six sampling frame areas. A minimum of 70 sample points was examined per sampling frame to yield a total sample size of 461 points. Building sizes, surface materials, roof characteristics, roof-mounted apparatus, chimneys, gutters, downspouts and fences were recorded. This report provides an initial summary of the data collected.

41-663
Arctic and subarctic construction: general provisions.
Lobacz, E.F., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1986, SR 86-17, 75p., ADA-172 674, Refs. p.72-75.
Cold weather construction, Frost action, Permafrost distribution, Frost penetration, Freezing indexes, Ground thawing, Snow cover distribution, Polar regions.
Working in the world's cold regions is quite different from working in warmer places. This document gives general information on frost action, permafrost and other special factors to help engineers who must operate in arctic and subarctic areas.

41-664
Geologic studies in Alaska by the U.S. Geological Survey during 1985.
Bartsch-Winkler, S., ed, *U.S. Geological Survey. Circular*, 1986, No.978, 173p., Refs. passim.
Reed, K.M., ed.
Geology, Seismology, Mineralogy, Geophysical surveys, Polar regions, Paleoclimatology, United States—Alaska.

41-665
Behaviour of offshore structures; Proceedings.
International Conference on Behaviour of Offshore Structures, (BOSS '85), 4th, Delft, The Netherlands, July 1-5, 1985, Development in marine technology, No.2, Amsterdam, Elsevier, 1985, 1012p., Refs. passim. For selected papers see 41-666 through 41-671.
Battjes, J.A., ed.
Offshore structures, Ice loads, Ice mechanics, Ice solid interface, Ice conditions, Icebergs, Offshore drilling, Engineering.

41-666
Recent developments in ice mechanics and ice loads.
Croasdale, K.R., International Conference on Behaviour of Offshore Structures, (BOSS '85), 4th, Delft, The Netherlands, July 1-5, 1985. Proceedings. Edited by J.A. Battjes, Amsterdam, Elsevier, 1985, p.53-74, 57 refs.
Ice mechanics, Ice loads, Offshore structures, Ice solid interface, Ice condition, Sea ice, Slope orientation, Experimentation.

41-667
Calculation of global ice force from wall-mounted pressure sensors.
Myers, P.E., International Conference on Behaviour of Offshore Structures, (BOSS '85), 4th, Delft, The Netherlands, July 1-5, 1985. Proceedings. Edited by J.A. Battjes, Amsterdam, Elsevier, 1985, p.685-692.
Ice pressure, Offshore structures, Ice loads, Pack ice, Offshore drilling.

41-668
Review of interaction of icebergs with offshore structures.
Arunachalam, V.M., et al, International Conference on Behaviour of Offshore Structures, (BOSS '85), 4th, Delft, The Netherlands, July 1-5, 1985. Proceedings. Edited by J.A. Battjes, Amsterdam, Elsevier, 1985, p.693-704, 33 refs.
Bobby, W., Muggeridge, D.B., Stacey, R.A.
Icebergs, Ice solid interface, Offshore structures, Ice loads, Drift, Models, Design, Ocean currents, Ice conditions, Sea ice distribution, Ice detection, Ocean waves.

41-669
Towards an actual probabilistic approach in predicting offshore structures behaviour in arctic regions.
Zaleski-Zamenhof, L.C., et al, International Conference on Behaviour of Offshore Structures, (BOSS '85), 4th, Delft, The Netherlands, July 1-5, 1985. Proceedings. Edited by J.A. Battjes, Amsterdam, Elsevier, 1985, p.705-716, 30 refs.
Rojansky, M.
Offshore structures, Icebergs, Ice loads, Impact strength, Ice pressure, Design criteria, Drift, Velocity.

41-670
Endochronic constitutive modeling of marine fiber reinforced concrete and frozen soil.
Reddy, D.V., et al, International Conference on Behaviour of Offshore Structures, (BOSS '85), 4th, Delft, The Netherlands, July 1-5, 1985. Proceedings. Edited by J.A. Battjes, Amsterdam, Elsevier, 1985, p.845-856, 22 refs.
Gopal, K.R.
Subsea permafrost, Frozen ground physics, Reinforced concretes, Offshore structures, Foundations, Flexural strength, Steel structures, Thermodynamics, Mathematical models, Stresses, Strains.

41-671
Response of offshore structures to bergy-bit and iceberg impacts.
Arockiasamy, M., et al, International Conference on Behaviour of Offshore Structures, (BOSS '85), 4th, Delft, The Netherlands, July 1-5, 1985. Proceedings. Edited by J.A. Battjes, Amsterdam, Elsevier, 1985, p.951-961, 36 refs.
Swamidas, A.S.J., El-Tahan, H.
Offshore structures, Icebergs, Ice loads, Ice solid interface, Impact strength, Models, Ice conditions.

41-672
Atmospheric toxic metals and metalloids in the snow and ice layers deposited in Greenland and Antarctica from prehistoric times to present.
Boutron, C.F., Advances in environmental science and technology, Vol.17. Toxic metals in the atmosphere. Edited by J.O. Nriagu and C.I. Davidson, New York, John Wiley and Sons, 1986, p.467-505, Refs. p.501-505.
DLC TD180.A38
Ice composition, Air pollution, Ice cores, Chemical analysis, Metals, Ice sampling, Snow air interface.
The chapter presents a succinct discussion of various ultraclean field sampling techniques, laboratory decontamination procedures, and analytical methods which have been developed by various research groups for the analysis of toxic metals and metalloids in Greenland and antarctic snow and ice. This is followed by a critical review of the data, and a discussion of the present knowledge on the atmosphere-snow interactions which are responsible for these elements in the snow and ice layers.

41-673
Some relationship between antarctic ice extent and climate.
Peng, G., et al, *Scientia geographica sinica*, 1983, 3(4), p.303-309, In Chinese with English summary. 7 refs.
Si, Y.
Ice sheets, Snow accumulation, Ice accretion, Air temperature, Snow air interface, Ice air interface.
There are close relationships between the antarctic ice extent, the components of atmospheric circulation and the air temperature of China. While the zonal circulation of the Northern Hemisphere becomes strong, the active centers of atmosphere over the world move south, the subtropical anticyclones of the Southern Hemisphere and the cyclonic system near the Antarctic move to the south too, correspondingly, the Antarctic ice-snow cover increases.

41-674
Numerical study of plane ice-sheet flow.
Hutter, K., et al, *Journal of glaciology*, 1986, 32(111), p.139-160, 29 refs., With French and German summaries.
Yakowitz, S., Szdanovszky, F.
Ice mechanics, Glacier flow, Ice sheets, Grounded ice, Ice models, Basal sliding, Mathematical models, Boundary value problems, Temperature effects.

41-675
On the deterioration of a grounded iceberg.
Venkatesh, S., *Journal of glaciology*, 1986, 32(111), p.161-167, 9 refs., With French and German summaries.
Icebergs, Velocity, Grounded ice, Ice deterioration, Models, Floating ice, Buoyancy.

41-676
Theory and laboratory observations of naled ice growth.
Schohl, G.A., et al, *Journal of glaciology*, 1986, 32(111), p.168-177, 19 refs., With French and German summaries.
Ettema, R.
Naleds, Ice growth, Analysis (mathematics), Temperature effects, Experimentation.

41-677
Propagating strain anomalies during mini-surges of Variegated Glacier, Alaska, U.S.A.
Raymond, C.F., et al, *Journal of glaciology*, 1986, 32(111), p.178-191, 17 refs., With French and German summaries.
Malone, S.
Glacier surges, Strains, Seismology, Basal sliding, Velocity, United States—Alaska—Variegated Glacier.

41-678
Refraction correction for radio echo-sounding of ice overlain by firn.
Rasmussen, L.A., *Journal of glaciology*, 1986, 32(111), p.192-194, 6 refs., With French and German summaries.
Ice cover thickness, Radio echo soundings, Firn, Wave propagation, Refraction, Analysis (mathematics), Density (mass/volume).

41-679
Discharges of turbid water during mini-surges of Variegated Glacier, Alaska, U.S.A.
Humphrey, N., et al, *Journal of glaciology*, 1986, 32(111), p.195-207, 28 refs., With French and German summaries.
Raymond, C., Harrison, W.
Glacial hydrology, Glacier surges, Turbulent flow, Meltwater, Glacial rivers, Climatic factors, Diurnal variations, Velocity, Water flow, United States—Alaska—Variegated Glacier.

41-680
Mass balance of four cirque glaciers in the Torngat Mountains of Northern Labrador, Canada.
Rogerson, R.J., *Journal of glaciology*, 1986, 32(111), p.41-680, 12 refs., With French and German summaries.
Cirque glaciers, Glacier mass balance, Snowfall, Climatic factors, Variations, Mapping, Mountains, Canada—Torngat Mountains.

41-681
Determination of particle paths using the finite-element method.
Stolle, D.F.E., et al, *Journal of glaciology*, 1986, 32(111), p.219-223, 15 refs., With French and German summaries.
Killeavy, M.S.
Ice cores, Ice dating, Glacier ice, Ice sheets, Ice mechanics, Atmospheric composition, Paleoclimatology, Age determination, Mathematical models, Particles, Glacier flow.

41-682
Debris-influenced sliding laws and basal debris balance.
Shoemaker, E.M., *Journal of glaciology*, 1986, 32(111), p.224-231, 27 refs., With French and German summaries.
Sediment transport, Sliding, Flow rate, Glacier flow, Ice erosion, Analysis (mathematics), Ice melting, Glacier beds, Mechanical properties.

41-683
Some observations on subglacial ground-water flow.
Smart, C.C., *Journal of glaciology*, 1986, 32(111), p.224-231, 13 refs. With French and German summaries.
Ground water, Subglacial drainage, Water flow, Sediment transport, Karst, Aerial surveys, Photography.

41-684
Modeling the influence of till rheology on the flow and profile of the lake Michigan lobe, southern Laurentide ice sheet, U.S.A.
Beget, J.E., *Journal of glaciology*, 1986, 32(111), p.235-241, Refs. p.239-241., With French and German summaries.
Glacial deposits, Glacier flow, Ice sheets, Rheology, Sediments, Stress strain diagrams, Glacier beds, Paleoclimatology, Models, Pleistocene, Soil creep.

41-685
Antarctic iceberg distribution and dissolution.
Hamley, T.C., et al, *Journal of glaciology*, 1986, 32(111), p.242-251, Refs. p.250-251., With French and German summaries.
Budd, W.F.
Icebergs, Ice breakup, Ice melting, Sea ice distribution, Calving.
Iceberg sizes and concentrations in the southern ocean between longitude 60 and 140E were studied. The resulting size-frequency distributions are examined in conjunction with a knowledge of water movement along known drift tracks in a selected study area (between lat. 59 and 64S) to determine iceberg dissolution rates. The "median life" (before breaking) of icebergs less than 1000 m in horizontal dimension is estimated to be 0.2 a, which is significantly lower than was previously thought. The mean melt rate is estimated to be 0.12 m/day, which agrees broadly with previous laboratory studies. The relative contributions of melt, calving, and breakage, plus the enhancement effect of roll-over, are examined in estimating the natural dissolution rate. Breakage appears to be the dominant mechanism for larger icebergs with melt and calving able to explain the disappearance of icebergs in the smallest categories only (within the mean "median-life" period). Examination of the historical records of Captain Cook indicates that iceberg concentrations, as well as the northerly extent in this region 200 years ago, were compatible with the present data. (Auth. mod.)

41-686
Flow of the Brunt Ice Shelf, Antarctica, derived from Landsat images, 1974-85.
Simmons, D.A., *Journal of glaciology*, 1986, 32(111), p.252-254, 4 refs., With French and German summaries.
Ice shelves, Flow measurement, LANDSAT, Antarctica—Brunt Ice Shelf.
Satellite images recorded in 1973, 1974, and 1985 of the Brunt Ice Shelf are compared. There are sufficient identifiable features moving with the ice shelf to show flow patterns over an area of about 10,000 sq km. Velocities vary from 500 m/a in the west, near the Dawson-Lambton Ice Stream, to 1300 m/a in the east, within the Stancomb-Wills Ice Stream. (Auth.)

41-687
Role of debris cover in the thermal physics of glaciers.
Bozhinskiĭ, A.N., et al, *Journal of glaciology*, 1986, 32(111), p.255-266, 30 refs., With French and German summaries.
Krass, M.S., Popovnin, V.V.
Glacier melting, Ice melting, Moraines, Ice thermal properties, Heat balance, Heat transfer, Stefan problem, Mathematical models, Distribution, Solar radiation, Runoff.

41-688
Stress-gradient coupling in glacier flow: I. longitudinal averaging of the influence of ice thickness and surface slope.
Kamb, B., et al, *Journal of glaciology*, 1986, 32(111), p.267-284, 35 refs., With French and German summaries.
Echelmeyer, K.A.
Glacier flow, Stresses, Glacier beds, Slope orientation, Flow rate, Glacier thickness, Analysis (mathematics), Velocity, Rheology, Glacier surfaces.

41-689
Stress-gradient coupling in glacier flow: II. longitudinal averaging in the flow response to small perturbations in ice thickness and surface slope.
Echelmeyer, K.A., et al, *Journal of glaciology*, 1986, 32(111), p.285-298, 7 refs., With French and German summaries.
Kamb, B.
Glacier flow, Stresses, Shear flow, Ice sheets, Glacier thickness, Slope orientation, Velocity, Glacier surfaces, Analysis (mathematics).

41-690
New instrument for determining strength profiles in snow cover.
Dowd, T., et al, *Journal of glaciology*, 1986, 32(111), p.299-301, 6 refs. With French and German summaries.
Brown, R.L.
Snow strength, Snow cover, Measuring instruments, Profiles, Temperature gradients.

41-691
Method for growing large single crystals of sea ice.
Kawamura, T., *Journal of glaciology*, 1986, 32(111), p.320-303, 7 refs., With French and German summaries.
Ice crystal growth, Sea water, Sea ice, Ice physics.

41-692
Glacial lake drainage near Söndre Strömfjord, West Greenland.
Gordon, J.E., *Journal of glaciology*, 1986, 32(111), p.304, 1 ref. A discussion of 40-2695, by D.E. Sugden et al. Jökulhlaup near Söndre Strömfjord, West Greenland, and some effects on the ice-sheet margin. Sugden, D.E.
Glacial lakes, Glacial hydrology, Ice dams, Drainage.

41-693
Effect of freezing on the level of contaminants in uncontrolled hazardous waste sites. Part 1: literature review.
Iskandar, I.K., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1986, SR 86-19, 33p., ADA-172 979, Refs. p.27-33.
Waste treatment, Pollution, Soil freezing, Water treatment, Sea water, Sludges, Freeze thaw cycles, Ions, Artificial freezing.
This report reviews the literature concerning the effects of ground freezing on uncontrolled hazardous waste sites. Since there was very little information directly related to hazardous waste materials, previous studies on the beneficial use and impact of freezing on wastewater, sea water, sludges and soils have been included. Freezing of uncontrolled hazardous waste sites may cause frost heaving of buried waste material, allowing chemical wastes to move upward, and chemical transport of ions in freezing and frozen soils. Also, repeated cycles of freeze-thaw may adversely affect the durability of clay liners being used to cover hazardous waste sites. Grou I freezing can be used beneficially to 1) dewater and consolidate hazardous waste materials, particularly slurry-type wastes; 2) serve as an alternative to slurry walls, trenches, etc., to separate contaminated areas, and 3) immobilize the contaminants, particularly if time is a critical factor

41-694
Geologic report for the Beaufort Sea planning area, Alaska: Regional geology, petroleum geology, environmental geology.
Craig, J.D., et al, *U.S Minerals Management Service, Alaska OCS region. Report*, Dec. 1985, MMS 85-0111, 192p. + maps, Refs. p.171-191.
Sherwood, K.W., Johnson, P.P.
Ice conditions, Geology, Seismic surveys, Offshore structures, Hydrocarbons, Stratigraphy, Ice loads, Ice scoring, Beaufort Sea.

41-695
***M.V. Arctic*--spring 1986 performance trials voyage report.**
Peirce, T.H., et al, *Transport Canada. Report*, June 1986, TP 7745E, 30p., With French summary.
Peirce, J.C.
Ice navigation, Ice breaking, Models, Instruments.

41-696
Northern Oil and Gas Action Program (NOGAP) bibliography, Volume 1.
Canada. Department of Indian and Northern Affairs, Aug. 1986, 51p.
Natural resources, Ice navigation, Bibliographies, Environmental protection, Economic development, Canada.

41-697
Bibliography of alpine and subalpine areas of the Front Range, Colorado.
Halfpenny, J.C., comp, *Colorado. University, Boulder. Institute of Arctic and Alpine Research. Occasional paper*, 1986, No.43, 114p.
Ingraham, K.P., comp, Mattyse, J., comp, Lehr, P.J., comp.
Alpine glaciation, Vegetation, Environmental protection, Climatology, Bibliographies, Mountains, Ecosystems, United States—Colorado—Front Range.

41-698
Snow and ice in Earth's environment. [Sneg i led v prirode Zemli],
Kotliakov, V.M., Moscow, Nauka, 1986, 157p., In Russian. 34 refs.
Snow, Sea ice, Climate, Ice sheets, Paleoclimatology, Glaciation, Glacier ice, Ice cover effect.
The purpose of this book is to examine the significant role that snow and ice play in the Earth's climate, water resources and the level of oceans. Methods and results of glaciological investigations, particularly in the Antarctic, regarding the role of glaciation in the Earth's evolution, the use of snow and ice in economy, and the struggle with their harmful effects, among others, are reviewed. Prospects for the solution of main glaciological problems are considered, including a mention of efforts in that direction carried out at Soviet stations in Antarctica.

41-699
Estimating snow reserves, avalanches, runoff and water balance in the Kyzylchi River basin (based on aerial photography). [K otsenke snegozapasov, lavin, stoka i vodnogo balansa v basseine r. Kyzylchi (na osnove aerofotos"emki)],
Gapishko, V.G., *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.119, p.19-23, In Russian. 4 refs.
River basins, Snow water equivalent, Snow cover stability, Avalanche formation, Water balance, Alpine landscapes, Snow cover distribution, Snow depth.

41-700
Possibility of calculating mean water depths on the Amudar'ia River during its freezing. [O vozmozhnosti rascheta srednikh glubin na r. Amudar'e pri ee zamerzanii],
Agal'tseva, N.A., et al, *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.119, p.48-51, In Russian. 8 refs.
Abramenkov, N.M.
River ice, Ice formation, Ice growth, Ice cover thickness, Water level.

41-701
Atlas of the Arctic. [Atlas Arktiki],
Treshnikov, A.F., ed, Moscow, 1985, 204p., In Russian.
Maps, Mapping, Polar regions, Arctic landscapes.

41-702
All-Union seminar on remote sensing methods and means of measuring oceanographic parameters, 5th, Moscow, Sep. 20-23, 1983. Proceedings. [Sbornik dokladov],
Vsesoiuznyĭ seminar po nekontaktnym metodam i sredstvam izmereniĭ okeanograficheskikh parametrov, 5th, Moscow, Sep. 20-23, 1983, Moscow, Gidrometeoizdat, 1986, 236p., In Russian. For selected papers see 41-703 through 41-707. Refs. passim.
Shlygin, I.A., ed, Kireev, I.V., ed.
Ice surface, Remote sensing, Ice cover thickness, Ice water interface, Radio echo soundings, Ice physics, Spaceborne photography, Radiation measuring instruments, Snow cover effect, Thermal radiation, Brightness, Arctic Ocean.

41-703
Influence of the atmosphere and snow cover on the emissive properties of ice. [Vliianie atmosfery i snezhnogo pokrova na izluchatel'nye kharakteristiki l'dov],
Pichugin, A.P., et al, Vsesoiuznyĭ seminar po nekontaktnym metodam i sredstvam izmereniĭ okeanograficheskikh parametrov, 5th, Moscow, Sep. 20-23, 1983 (All-Union seminar on remote sensing methods and means of measuring oceanographic parameters, 5th, Moscow, Sep. 20-23, 1983. Proceedings) edited by I.A. Shlygin and I.V. Kireev, Moscow, Gidrometeoizdat, 1986, p.119-123, In Russian. 3 refs.
Komiak, V.A., Malyshenko, IU.I.
Ice surface, Remote sensing, Ice cover thickness, Radiation, Ice water interface, Ice physics, Snow cover effect, Thermal radiation, Radiation measuring instruments, Brightness, Arctic Ocean.

41-704
Modeling the processes of radar sounding of ice covers. [Modelirovanie protsessov radiolokatsionnogo zondirovaniia ledovykh pokrovov],
Timchenko, A.I., et al, Vsesoiuznyĭ seminar po nekontaktnym metodam i sredstvam izmereniĭ okeanograficheskikh parametrov, 5th, Moscow, Sep. 20-23, 1983 (All-Union seminar on remote sensing methods and means of measuring oceanographic parameters, 5th, Moscow, Sep. 20-23, 1983. Proceedings) edited by I.A. Shlygin and I.V. Kireev, Moscow, Gidrometeoizdat, 1986, p.123-126, In Russian.
Sinitsyn, IU.A.
Radar echoes, Ice dating, Mathematical models.

41-705
Prospects of using autoregression methods in measuring ice thickness by continuous radiation systems. [O perspektivnosti ispol'zovaniia avtoregressivnykh metodov pri izmerenii tolshchiny l'da sistemami s nepreryvnym izlucheniem],
Kalmykov, A.A., et al, Vsesoiuznyĭ seMinar po nekontaktnym metodam i sredstvam izmereniĭ okeanograficheskikh parametrov, 5th, Moscow, Sep. 20-23, 1983 (All-Union seminar on remote sensing methods and means of measuring oceanographic parameters, 5th, Moscow, Sep. 20-23, 1983. Proceedings) edited by I.A. Shlygin and I.V. Kireev, Moscow, Gidrometeoizdat, 1986, p.126-130, In Russian. 4 refs.
Nikitin, N.P., Luzin, V.I., Dobriak, V.A.
Ice cover thickness, Radio echo soundings, Measuring instruments.

41-706
Remote sensing of sea ice by complex radar-radiometric methods. [Distantsionnye issledovaniia morskikh l'dov kompleksnym radiolokatsionno-radiometricheskim metodom],
Gavrilenko, A.S., et al, Vsesoiuznyĭ seminar po nekontaktnym metodam i sredstvam izmereniĭ okeanograficheskikh parametrov, 5th, Moscow, Sep. 20-23, 1983 (All-Union seminar on remote sensing methods and means of measuring oceanographic parameters, 5th, Moscow, Sep. 20-23, 1993.) Proceedings edited by I.A. Shlygin and I.V. Kireev, Moscow, Gidrometeoizdat, 1986, p.130-134, In Russian. 4 refs.
Ice dating, Radar echoes, Spaceborne photography, Sea ice distribution, Ice cover thickness, Mapping, Ice surveys, Photointerpretation, Remote sensing.

41-707
Interpreting satellite scanning images of medium resolution for studying ice conditions in the Baltic Sea. [Opyt interpretatsii sputnikovykh skanernykh izobrazheniĭ srednego razresheniia dlia izucheniia ledovykh uslovīĭ na Baltiĭskom more],
Drabkin, V.V., Vsesoiuznyĭ seminar po nekontaktnym metodam i sredstvam izmereniĭ okeanograficheskikh parametrov, 5th, Moscow, Sep. 20-23, 1983 (All-Union seminar on remote sensing methods and means of measuring oceanographic parameters, 5th, Moscow, Sep. 20-23, 1983. Proceedings) edited by I.A. Shlygin and I.V. Kireev, Moscow, Gidrometeoizdat, 1986, p.223-227, In Russian.
Spaceborne photography, Sea ice distribution, Ice conditions, Ice surveys, Photointerpretation.

41-708
Mechanism of occurrence of snow damages to forestation trees in North-East Japan.
Tsukahara, H., et al, *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1984, No.153, p.133-138, With German summary. 4 refs.
Ohtani, H.
Snow loads, Trees (plants), Snow mechanics, Avalanche mechanics, Damage, Mountains, Snowfall, Japan.

41-709
Process of bend forming and reerecting of the lower part in the stem due to snow pressure and the tree weight increase in Tateyama Sugi *(Cryptomeria japonica* D. Don) plantations.
Taira, H., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1984, No.153, p.139-147, With German summary. 4 refs.
Snow loads, Trees (plants), Deformation, Avalanche deposits, Impact strength, Damage, Japan.

41-710
Current problems on avalanche research in France, Japan and Austria. [Aktuelle Probleme der Lawinenforschung in Frankreich, Japan und Österreich],
Kronfellner-Kraus, G., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1984, No.153, p.151-154, In German with English summary. 2 refs.
Avalanches, Research projects, Meetings, Japan, France, Austria.

41-711
Snow and avalanche research at the Institute of Soil Mechanics, Rock Mechanics and Ground Engineering of the University of Innsbruck: 1. Research on slab avalanches; 2. Soil and rock mechanics in relation to avalanche defense structures. [Schnee- und Lawinenforschung am Institut für Bodenmechanik, Felsmechanik und Grundbau der Universität Innsbruck: 1). Untersuchungen an Gleitschneelawinen, 2). Boden- und felsmechanische Probleme bei Lawinenschutzbauten],
Lackinger, B., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1984, No.153, p.155-173, In German with English summary. 21 refs.
Avalanche mechanics, Soil mechanics, Rock mechanics, Erosion, Snow fences, Countermeasures, Bearing strength, Mountains, Structures.

41-712
Progress in snow and avalanche measuring techniques by using microprocessors. [Fortschritte in der Schnee- und Lawinenmesstechnik durch den Einsatz von Mikroprozessoren],
Neubauer, F., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1984, No.153, p.175-179, In German.
Avalanche mechanics, Avalanche formation, Microanalysis, Snow mechanics, Countermeasures, Computer applications.

41-713
Effect of snow-cover blasting on erosion. [Einfluss von Schneefeldsprengungen auf die Erosion].
Bunza, G., et al, *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1984, No.153, p.181-190, In German. 3 refs.
Christa, R., Pröbstle, E.
Snow mechanics, Explosion effects, Soil erosion, Vegetation, Damage, Blasting.

41-714
Avalanche statistics in Austria. [Über die Lawinenstatistik in Österreich].
Merwald, I., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1984, No.153, p.191-204, In German with English summary. 22 refs.
Avalanche formation, Avalanche tracks, Accidents, Damage, Statistical analysis, Austria.

41-715
Snow cover development in relation to weather conditions (exemplified by an alpine slope). [Wetterlagen und Schneedeckenentwicklung (am Beispiel einer inneralpinen Hanglage)].
Schaffhauser, H., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1984, No.153, p.205-224, In German with English summary. 9 refs.
Snow cover stability, Avalanche formation, Climatic factors, Snow depth, Temperature gradients, Metamorphism (snow), Snowfall.

41-716
Avalanches in an avalanche starting zone with and without snow fences and forestation. [Lawinenaktivität im Lawinenanbruchgebiet mit und ohne Lawinenstützverbau und Aufforstung].
Rychetnik, J., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1985, No.156, p.197-208, In German with English summary. 8 refs.
Avalanche formation, Snow fences, Structures, Forest land, Protection, Mapping, Statistical analysis.

41-717
Measurements of deformation in a firn pit. [Deformationsmessungen an einem Firnschacht].
Ambach, W., et al, *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1985, No.156, p.211-222, In German with English summary. 12 refs.
Eisner, H.
Firn, Rheology, Boreholes, Snow creep, Deformation, Viscosity, Shear properties, Compaction, Analysis (mathematics).

41-718
Use of microcomputer system for snow slide measurements. [Einsatz eines Mikrocomputersystems bei Gleitschneemessungen].
Lackinger, G., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1985, No.156, p.223-226, In German. 3 refs.
Snow slides, Avalanche formation, Computer applications, Measuring instruments.

41-719
Mountain collapse and rock sliding from Mount Saint Helens. [Die Bergsturz- und Murlavinen vom Mt. St. Helens, Washington, USA].
Kronfellner-Kraus, G., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1985, No.156, p.227-232, In German. 5 refs.
Rock streams, Soil mechanics, Mountains, Volcanoes, United States—Washington—Mount Saint Helens.

41-720
Rock avalanches in Huascaran Mountain, Peru. [Die Bergsturzmuren vom Huascaran, Peru].
Körner, H., *Vienna. Forstliche Bundesversuchsanstalt. Mitteilungen*, 1985, No.156, p.233-247, In German. 20 refs.
Rock streams, Avalanches, Ice mechanics, Snow mechanics, Mountains, Peru—Huascaran Mountain.

41-721
Regularities of formation and the regime of hydrometeorological processes in mountainous regions of Tien Shan. [Zakonomernosti formirovaniia i rezhima gidrometeorologicheskikh protsessov v gornykh raionakh Tian'-Shania].
Mamatkanov, D.M., ed, Frunze, Ilim, 1984, 110p., In Russian. For selected papers see 41-722 through 41-726. Refs. passim.
Glacial lakes, Glacial rivers, Glacier ablation, Runoff, Ice dams, Mountain glaciers, Floods, Ground water, Glacial hydrology, Mudflows, Alimentation, Seasonal variations, Snow water equivalent.

41-722
Hydrologic regime of rivers in inner and central Tien Shan. [Gidrologicheskii rezhim rek Vnutrennego i Tsentral'nogo Tian'-Shania].
Muzakeev, M.A., Zakonomernosti formirovaniia i rezhima gidrometeorologicheskikh protsessov v gornykh raionakh Tian'-Shania (Regularities of formation and the regime of hydrometeorological processes in mountainous regions of Tien Shan) edited by D.M. Mamatkanov, Frunze, Ilim, 1984, p.3-9, In Russian. 3 refs.
Glacial rivers, Alimentation, Snow water equivalent, Glacier ablation, Runoff, Ground water, Seasonal variations.

41-723
Water balance of the Changet and Zhazy (Yassy) river basins. [Vodnyi balans rek basseinov Changet i Zhazy (IAssy)].
Muzakeev, M.A., et al, Zakonomernosti formirovaniia i rezhima gidrometeorologicheskikh protsessov v gornykh raionakh Tian'-Shania (Regularities of formation and the regime of hydrometeorological processes in mountainous regions of Tien Shan) edited by D.M. Mamatkanov, Frunze, Ilim, 1984, p.9-25, In Russian. 3 refs.
Ergeshev, A.
Ground water, Glacier ablation, Glacial hydrology, Glacial rivers, Runoff, Alimentation, Landscape types, Seasonal variations, Snow water equivalent.

41-724
Ground water runoff into Kirghiz rivers. [Podzemnyi stok v reki Kirgizii].
Ergeshev, A., Zakonomernosti formirovaniia i rezhima gidrometeorologicheskikh protsessov v gornykh raionakh Tian'-Shania (Regularities of formation and the regime of hydrometeorological processes in mountainous regions of Tien Shan) edited by D.M. Mamatkanov, Frunze, Ilim, 1984, p.26-35, In Russian. 14 refs.
Alimentation, Glacial hydrology, Ground water, Runoff, Seasonal variations, River basins.

41-725
Types of mudflows and danger areas in the Kirghiz Range. [Tipy selei i seleopasnye raiony Kirgizskogo khrebta].
Bobushev, T.S., Zakonomernosti formirovaniia i rezhima gidrometeorologicheskikh protsessov v gornykh raionakh Tian'-Shania (Regularities of formation and the regime of hydrometeorological processes in mountainous regions of Tien Shan) edited by D.M. Mamatkanov, Frunze, Ilim, 1984, p.35-41, In Russian. 5 refs.
Glacial lakes, Ice dams, Slope processes, Mudflows, Landslides, Snow melting.

41-726
Territorial concordance of long-range runoff fluctuations during vegetational periods on rivers of northern Kirgizia. [Territorial'naia soglasovannost' mnogoletnikh kolebanii stoka za vegetatsionnyi period na rekakh Severnoi Kirgizii].
Alamanov, S.K., Zakonomernosti formirovaniia i rezhima gidrometeorologicheskikh protsessov v gornykh raionakh Tian'-Shania (Regularities of formation and the regime of hydrometeorological processes in mountainous regions of Tien Shan) edited by D.M. Mamatkanov, Frunze, Ilim, 1984, p.63-68, In Russian. 4 refs.
River basins, Snow water equivalent, Runoff, Glacier ablation, Seasonal variations, Snow cover distribution.

41-727
Proceedings.
Symposium on Glacier Mapping and Surveying, Reykjavik, Aug. 26-29, 1985, *Annals of glaciology*, 1986, Vol.8, 216p., Refs. passim. For individual papers see 41-411, 41-412 and 41-728 through 41-768, or F-34504 through F-34507.
Glacier surveys, Mapping, Snow surveys, Remote sensing, Meetings, Glacier mass balance, Glacier flow, Glacial hydrology, Glacier surfaces, Radio echo soundings.

41-728
History of mapping in Iceland, with special reference to glaciers.
Tómasson, H., *Annals of glaciology*, 1986, Vol.8, p.4-7, 4 refs.
Glacier surveys, Mapping, History, Iceland.

41-729
Mapping structure and morphology of Soler Glacier, Chile, using vertical aerial photographs.
Aniya, M., et al, *Annals of glaciology*, 1986, Vol.8, p.8-10, 7 refs.
Naruse, R.
Aerial surveys, Mountain glaciers, Crevasses, Glacier surfaces, Glacier flow, Photography, Mapping, Chile—Soler Glacier.

41-730
Surface and bedrock topography of icecaps in Iceland mapped by radio echo-soundings.
Björnsson, H., *Annals of glaciology*, 1986, Vol.8, p.11-18, 24 refs.
Glacier surfaces, Glacier beds, Radio echo soundings, Glacier thickness, Topographic features, Mapping, Measuring instruments, Iceland.

41-731
Delineation of glacier drainage basins on Hofsjökull and Western Vatnajökull.
Björnsson, H. *Annals of glaciology*, 1986, Vol.8, p.19-21, 9 refs.
Glacial hydrology, Subglacial drainage, Water flow, Meltwater, Glacier beds, Topographic features, Mapping, Iceland—Vatnajökull.

41-732
Photo-interpretation, digital mapping and the evolution of glaciers in Glacier National Park, B.C.
Champoux, A.C., et al, *Annals of glaciology*, 1986, Vol.8, p.27-30, 7 refs.
Ommanney, C.S.L.
Glacier surveys, Photointerpretation, Mountain glaciers, Mapping, Aerial surveys, Glacier surfaces, Glacier mass balance, Computer applications, Canada—British Columbia—Glacier National Park.

41-733
Evolution of the Illecillewaet Glacier, Glacier National Park, B.C., using historical data, aerial photography and satellite image analysis.
Champoux, A.C., et al, *Annals of glaciology*, 1986, Vol.8, p.31-33, 6 refs.
Ommanney, C.S.L.
Glacier surveys, Remote sensing, Glacier oscillation, Photointerpretation, Aerial surveys, Canada—British Columbia—Glacier National Park.

41-734
Map of the Mount Gongga Glacier: a combination of terrestrial and aerial photogrammetry.
Chen, J., *Annals of glaciology*, 1986, Vol.8, p.34-36, 2 refs.
Glacier surveys, Mountain glaciers, Photogrammetry, Mapping, Aerial surveys.

41-735
Radio-echo investigations of Ronne Ice Shelf.
Crabtree, R.D., et al, *Annals of glaciology*, 1986, Vol.8, p.37-41, 15 refs.
Doake, C.S.M.
Ice shelves, Radio echo soundings, Ice creep, Rheology, Maps, Ice salinity, Bottom ice, Antarctica—Ronne Ice Shelf.
Since 1981, the British Antarctic Survey has flown 27,000 line kilometres over Ronne Ice Shelf, during which radio-echo ice thicknesses were recorded. An earlier map of ice thickness was compiled from about 5,000 km of flight lines, flown by three different organizations over a period of 12 years. A new, detailed map of the thickness of Ronne Ice Shelf has been produced, which agrees with the earlier version, but shows more structure in the north-western part. In particular, major ice streams maintain their identity from sources such as Evans and Rutford ice streams all the way to the ice front. Regions where the ice shelf is locally grounded over Kershaw Ice Rumples and over more extensive ice rumples between Korff and Henry ice rises play a significant role in controlling the dynamics of the ice shelf. There is a possibility of extensive freezing-on of sea water under the thin, central section of Ronne Ice Shelf, although the radio-echo evidence for a thick layer of saline ice is ambiguous. (Auth.)

41-736
Least squares method used in reduction of data from theodolite measurements on fast moving glaciers.
Dahl-Jensen, D., et al, *Annals of glaciology*, 1986, Vol.8, p.42-46, 5 refs.
Steffensen, J.-P., Johnsen, S.J.
Glacier flow, Glacier oscillation, Glacier surfaces, Surface properties, Ice mechanics, Statistical analysis, Analysis (mathematics), Velocity, Measuring instruments.

41-737
Digital mapping in polar regions from Landsat photographic products: a case study.
Dowdeswell, J.A., et al, *Annals of glaciology*, 1986, Vol.8, p.47-50, 12 refs.
Cooper, A.P.R.
Glacier surveys, Snow cover distribution, Mapping, LANDSAT, Photography, Aerial surveys, Norway—Nordaustlandet.

41-738
Digital mapping of the Nordaustlandet ice caps from airborne geophysical investigations.
Dowdeswell, J.A., et al, *Annals of glaciology*, 1986, Vol.8, p.51-58, 17 refs.
Glacier surveys, Geophysical surveys, Glacier surfaces, Glacier beds, Mapping, Airborne equipment, Glacier thickness, Radio echo soundings, Norway—Nordaustlandet.

41-739
Glacier volume estimation on Cascade volcanoes—an analysis and comparison with other methods.
Driedger, C., et al, *Annals of glaciology*, 1986, Vol.8, p.59-64, 14 refs.
Kennard, P.
Glacier mass balance, Snow cover distribution, Glacier thickness, Shear stress, Aerial surveys, Volcanoes, Ice volume, Photography, Distribution, United States—Washington—Mount Saint Helens.

41-740
Recession of Grasshopper Glacier, Montana since 1898.
Ferrigno, J.G., *Annals of glaciology*, 1986, Vol.8, p.65-68, 9 refs.
Glacier oscillation, Cirque glaciers, Glacier mass balance, Glacier surveys, Glacier melting, Pleistocene, Mapping, Photography, United States—Montana—Grasshopper Glacier.

41-741
Seasat range measurements verified on a D-D ice sheet.
Gundestrup, N.S., et al, *Annals of glaciology*, 1986, Vol.8, p.69-72, 18 refs.
Bindschadler, R.A., Zwally, H.J.
Glacier surveys, Remote sensing, Glacier surfaces, Glacier thickness, Topographic features, Radar, Ice sheets, Ice volume, Altitude, Greenland.

41-742
Glacier mapping to confirm results from mass-balance measurements.
Haakensen, N., *Annals of glaciology*, 1986, Vol.8, p.73-77, 8 refs.
Glacier surveys, Glacier mass balance, Glacier surfaces, Mapping, Photography, Seasonal variations, Ice volume, Norway.

41-743
Mapping the distribution of buried glacier ice—an example from Lago Delle Locce, Monte Rosa, Italian Alps.
Haeberli, W., et al, *Annals of glaciology*, 1986, Vol.8, p.78-81, 12 refs.
Epifani, F.
Glacier surveys, Glacial hydrology, Glacial deposits, Heat transfer, Mapping, Distribution, Floods, Protection, Subsurface investigations, Temperature effects, Moraines, Seismic refraction, Italy—Alps.

41-744
Short period motion events on Variegated Glacier as observed by automatic photography and seismic methods.
Harrison, W.D., et al, *Annals of glaciology*, 1986, Vol.8, p.82-89, 10 refs.
Raymond, C.F., Mackeith, P.
Glacier flow, Glacier surges, Photography, Glacier melting, Velocity, Seasonal variations, Seismic surveys, United States—Alaska—Variegated Glacier.

41-745
Use of LANDSAT digital data in glacier inventory.
Howarth, P.J., et al, *Annals of glaciology*, 1986, Vol.8, p.90-92, 47 refs.
Ommanney, C.S.L.
Glacier surveys, Remote sensing, Glacier surfaces, LANDSAT, Moraines, Aerial surveys, Snow cover distribution, Mapping.

41-746
High-precision distance measurement with an unmanned moving target.
Ito, H., et al, *Annals of glaciology*, 1986, Vol.8, p.93-95.
Schroff, K., Frei, H.-J.
Sea ice, Glacier surveys, Glacier flow, Drift, Measuring instruments, Glacier surges, Greenland Sea.

41-747
Ground survey and mapping of ice edge changes and multi-year sea ice growth along the north coast of Ellesmere Island, N.W.T.
Jeffries, M.O., et al, *Annals of glaciology*, 1986, Vol.8, p.96-99, 21 refs.
Serson, H.V.
Sea ice distribution, Ice surveys, Ice shelves, Ice edge, Ice growth, Calving, Photography, Fast ice, Canada—Northwest Territories—Ellesmere Island.

41-748
Response time of glaciers in Iceland to changes in climate.
Johannesson, T., *Annals of glaciology*, 1986, Vol.8, p.100-101, 9 refs.
Glacier surveys, Climatic changes, Glacier mass balance, Time factor, Glacier oscillation, Iceland.

41-749
Glacier mapping for an inventory of the Indus drainage basin: current state and future possibilities.
Kick, W.J., *Annals of glaciology*, 1986, Vol.8, p.102-105, 16 refs.
Glacier surveys, Glacier mass balance, Remote sensing, Mountain glaciers, Mapping, Photogrammetry, Drainage, India, Pakistan.

41-750
Recent changes of Nordbogletscher and Nodgletscher, Johan Dahl Land, South Greenland.
Knudsen, N.T., *Annals of glaciology*, 1986, Vol.8, p.106-110, 10 refs.
Glacier surveys, Glacier mass balance, Glacier surfaces, Glacier ablation, Aerial surveys, Photography, Climatic factors, Seasonal variations, Velocity, Greenland.

41-751
Main results of mapping glacio-nival systems for the World Atlas of Snow and Ice Resources.
Kotliakov, V.M., et al, *Annals of glaciology*, 1986, Vol.8, p.111-116, 5 refs.
Dreier, N.N., Kravtsova, V.I.
Glacier surveys, Snow surveys, Mapping, Distribution.

41-752
Using sequential photography to estimate ice velocity at the terminus of Columbia Glacier, Alaska.
Krimmel, R.M., et al, *Annals of glaciology*, 1986, Vol.8, p.117-123, 8 refs.
Rasmussen, L.A.
Glacier flow, Glacier surveys, Glacier surfaces, Photography, Velocity, Analysis (mathematics), United States—Alaska—Columbia Glacier.

41-753
Antarctic ice sheet topography and surface-bedrock relationships.
McIntyre, N.F., *Annals of glaciology*, 1986, Vol.8, p.124-128, 19 refs.
Maps, Ice sheets, Radio echo soundings, Ice physics, Bottom topography, Ice creep, Rheology.
Mapping the topography of the antarctic ice sheet has confirmed that there is, typically, a decrease in the wavelength and increase in the amplitude of surface undulations with distance from ice divides. This pattern is distorted by converging ice flow in coastal regions and by other variations in subglacial relief, ice velocity, and viscosity. The near-symmetry of undulations indicates the extent of three-dimensional flow over bedrock peaks. Spectral analyses indicate the greater response of the ice sheet to bedrock features with longer wavelengths. This is affected, and in some cases dominated, by the inhomogeneous and non-isothermal nature of the ice sheet. (Auth.)

41-754
Process for distribution of supraglacial debris on the Khumbu Glacier, Nepal Himalaya.
Nakawo, M., et al, *Annals of glaciology*, 1986, Vol.8, p.129-131, 18 refs.
Iwata, S., Watanabe, O., Yoshida, M.
Glacial deposits, Mountain glaciers, Glacier ablation, Distribution, Talus, Nepal—Khumbu Glacier.

41-755
Mapping Canada's glaciers.
Ommanney, C.S.L., *Annals of glaciology*, 1986, Vol.8, p.132-134, 30 refs.
Glacier surveys, Glacier mass balance, Remote sensing, Mapping, Glacial hydrology, Canada.

41-756
Repeated glacier mapping for hydrological purposes: water power planning.
Östrem, G., *Annals of glaciology*, 1986, Vol.8, p.135-140, 10 refs.
Glacier surveys, Glacial hydrology, Glacier mass balance, Glacial rivers, Meltwater, Electric power, Mapping, Norway.

41-757
Analysis and simulation of altimeter performance for the production of ice sheet topographic maps.
Partington, K.C., et al, *Annals of glaciology*, 1986, Vol.8, p.141-145, 10 refs.
Rapley, C.G.
Mapping, Radar tracking, Ice sheets, Topographic maps, Antarctica.
Altimeter performance over the ice sheets has been investigated through a study of Seasat tracking behavior and the use of an altimeter performance simulator, with a view to assessing the likely performance of ERS-1 and the design of improved tracking systems. Analysis of Seasat data shows that lock was frequently lost, as a result of possessing a non-linear height error signal over the width of the range window. Having lost lock, the tracker frequently failed to transfer rapidly and effectively to track mode. Use of the altimeter performance simulator confirms many of the findings from Seasat data and it is being used to facilitate data interpretation and mapping, through the modelling of waveform sequence. (Auth. mod.)

41-758
Velocity measurements on Daugaard-Jensen Glacier, Scoresbysund, East Greenland.
Reeh, N., et al, *Annals of glaciology*, 1986, Vol.8, p.146-150, 13 refs.
Olesen, O.B.
Glacier surveys, Glacier flow, Glacier surfaces, Subglacial drainage, Velocity, Mapping, Measuring instruments, Analysis (mathematics), Greenland.

41-759
Determination of changes in volume and elevation of glaciers, using digital elevation models for the Vernagtferner, Ötztal Alps, Austria.
Reinhardt, W., et al, *Annals of glaciology*, 1986, Vol.8, p.151-155, 11 refs.
Rentsch, H.
Glacier mass balance, Glacier thickness, Glacier surveys, Profiles, Ice volume, Models, Variations, Austria—Alps.

41-760
Radio echo-sounding on Jostedalsbreen, Norway.
Saetrang, A.C., et al, *Annals of glaciology*, 1986, Vol.8, p.156-158, 8 refs.
Wold, B.
Glacier surveys, Radio echo soundings, Glacier beds, Glacier thickness, Glacier surfaces, Mapping, Subglacial observations, Ice surface, Norway.

41-761
Multispectral digital image mapping of antarctic ice features.
Swithinbank, C., et al, *Annals of glaciology*, 1986, Vol.8, p.159-163, 7 refs.
Lucchitta, B.K.
LANDSAT, Ice sheets, Mapping, Radio echo soundings, Topographic maps, Antarctica.
Landsat multispectral images of the Antarctic ice sheet have been digitally enhanced by the US Geological Survey to show ice surface features not seen in earlier photographic products of the same scenes. Now for the first time it is worthwhile to prepare image maps at scales of up to 1:250,000 of ice sheet areas even where no nunataks are visible. Derivatives of the data can be stretched to bring out glaciologically significant features in smooth areas that traditionally have been described as featureless. Over large tracts of the ice sheet, the direction of ice flow can be revealed as clearly as it is by the medial moraines of an Alpine glacier system. Ice streams, ice divides, ice rises, ice rumples, grounding lines, crevasses, and rifts are seen where none had been identified before. In the same way that Seasat altimetry of the surface of the ocean has much to tell about the bed of the ocean, Landsat has much to tell about the bed of the ice. Not only major structural features but also many details of the sub-glacial landscape are unmasked by their subtle reflection on the ice sheet surface. Ground control on ice sheets can be obtained by Doppler satellite observations tied to image-identifiable surface features. Because of ice movement, the stand of geodetic control can never approach that of conventional surveys based on rock stations. But the precise standards of conventional surveys are unnecessary for ice sheet maps. (Auth.)

41-762
Photogrammetric and satellite mapping of the margin of the inland ice, West Greenland.
Thomsen, H.H., *Annals of glaciology*, 1986, Vol.8, p.164-167, 16 refs.
Glacier mass balance, Glacier surveys, Photogrammetry, Remote sensing, Runoff, Mapping, Ice edge, Ice sheets, Electric power, Glacier flow, Topographic features, Radio echo soundings, Greenland.

41-763
Flow near an ice divide: analysis problems and data requirements.
Waddington, E.D., et al, *Annals of glaciology*, 1986, Vol.8, p.171-174, 8 refs.
Fisher, D.A., Koerner, R.M., Paterson, W.S.B.
Ice deformation, Ice cores, Ice creep, Mass balance, Climatic changes, Rheology, Strains, Topographic features, Models, Boreholes.

41-764
Ice divide at Blue Glacier, U.S.A.
Waddington, E.D., et al, *Annals of glaciology*, 1986, Vol.8, p.175-176, 7 refs.
Marriott, R.
Glacier flow, Ice creep, Glacier mass balance, Rheology, Strains, Slope orientation, Surface properties, Mapping, Topographic features, Velocity, United States—Washington—Blue Glacier.

41-765
Topographic characteristics in the ablation area of the Khumbu Glacier, Nepal, Himalaya.
Watanabe, O., et al, *Annals of glaciology*, 1986, Vol.8, p.177-180, 8 refs.
Iwata, S., Fushimi, H.
Glacier ablation, Topographic features, Glacier mass balance, Glacier flow, Mapping, Glacier surveys, Surface properties, Glacier surfaces, Nepal—Khumbu Glacier.

41-766
Rock glaciers, ice-cored moraines and the problem of "hidden" ice in glacier mapping.
Whalley, W.B., et al, *Annals of glaciology*, 1986, Vol.8, p.181-183, 19 refs.
Martin, H.E., Gellatly, A.F.
Glacier surveys, Glacial deposits, Rock glaciers, Moraines, Mapping, Talus, Landforms.

41-767
Glacier fluctuations and glacier inventories of Iceland: evaluation and use of sources of data.
Williams, R.S., Jr., *Annals of glaciology*, 1986, Vol.8, p.184-191, 63 refs.
Glacier surveys, Glacier mass balance, Glacier oscillation, Mapping, Remote sensing, Distribution, Iceland.

41-768
Cartographic methods for large-scale glacier maps.
Yin, S., et al, *Annals of glaciology*, 1986, Vol.8, p.192-195, 5 refs.
Chen, J.
Glacier surveys, Mapping, Geomorphology, Topographic features, Landscape types, China.

41-769
Glaciology of mountainous regions. [Gliatsiologiia gornykh oblastei]
Suslov, V.F., ed, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, 136p., In Russian. For selected papers see 41-770 through 41-783. Refs. passim.
Drozdovskaia, N.F., ed.
Mountain glaciers, Snow accumulation, Firn, Glacial hydrology, Glacier ice, Metamorphism (snow), Moraines, Ice volume, Mass balance, Glacier surfaces, Alimentation, Ablation.

41-770
Composition and structure of the special data bank "Snow cover in mountains". [Sostav i struktura spetsializirovannogo banka dannykh "Snezhnyĭ pokrov v gorakh"]
Tsarev, B.K., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.3-10, In Russian. 10 refs.
Avalanche formation, Computer applications, Snow cover distribution, Data processing, Metamorphism (snow), Data transmission, Storage, Meteorological data, Alpine landscapes.

41-771
Method of calculating the warm-up date of snow cover. [Sposob rascheta daty progreva snezhnoĭ tolshchi]
Brukhanda, V.I., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.10-23, In Russian. 8 refs.
Kanaev, L.A., Kharitonov, G.G.
Avalanche formation, Snow temperature, Wet snow, Depth hoar, Snow cover structure, Snow cover stability.

41-772
Numerical classification of dry and wet snow avalanches based on standard meteorological observations. [Chislennoe klassifitsirovanie sukhikh i mokrykh lavin na osnove standartnykh meteorologicheskikh nabliudeniĭ]
Kharitonov, G.G., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.23-32, In Russian. 17 refs.
Snow water content, Avalanche formation, Snow accumulation, Snow cover stability, Avalanche forecasting, Snow cover distribution, Classifications.

41-773
Forecasting wet snow avalanches from meteorological data. [Prognoz mokrykh lavin v ralone avtodorogi Frunze-Osh s ispol'zovaniem aerosinopticheskikh dannykh]
Drozdovskaia, N.F., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.32-39, In Russian. 4 refs.
Zhukova, S.V., Salikhova, D.Kh.
Avalanche formation, Avalanche forecasting, Wet snow, Classifications, Meteorological data.

41-774
Method of forecasting fresh snow avalanches in the Talasskiy Alatau. [Metod prognoza lavin svezhevypavshego snega v Talasskom Alatau]
Borcheninova, T.M., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.39-43, In Russian. 5 refs.
Avalanche formation, Avalanche triggering, Avalanche forecasting, Snow depth, Snow cover stability.

41-775
Mass balance and trends in glacier changes in the USSR. [Veshchestvennyĭ balans i tendentsiia izmeneniia lednikov SSSR]
Akbarov, A.A., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.43-599, In Russian. 38 refs.
Suslov, V.F., Podkopaeva, L.D.
Mass balance, Climatic changes, Glacier ice, Mountain glaciers, Ice volume, Glacier alimentation, Glacier ablation.

41-776
Changes in glacial runoff of Central Asian rivers in relation to possible climatic variations. [Izmenenie lednikovogo stoka rek Sredneĭ Azii v sviazi s vozmozhnymi izmeneniiami klimata]
Glazyrin, G.E., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.59-70, In Russian. 9 refs.
Ratsek, I.V., Shchetinnikov, A.S.
Glacier ice, Ice volume, Climatic changes, Glacial rivers, Runoff, Meltwater.

41-777
Regional methods of calculating mean summer air temperature and the annual course of global radiation in Central Asia. [Regional'nye metody rascheta sredneĭ letneĭ temperatury vozdukha i vnutrigodovogo khoda summarnoĭ radiatsii na territorii Sredneĭ Azii]
Konovalov, V.G., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.71-80, In Russian. 6 refs.
Karandaeva, L.M.
Mountain glaciers, Glacier ice, Air temperature, Solar radiation.

41-778
Water resources in glaciers of the Syrdar'ia River basin. [Vodnye resursy ledniko basseina r. Syrdar'i]
Akbarov, A.A., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.80-88, In Russian. 8 refs.
Podkopaeva, L.D.
Glacier ice, Ice volume, Glacial hydrology, Runoff.

41-779
Calculating the volume of a stationary mountain glacier. [Metod rascheta ob"ema statsionarnogo gornogo lednika]
Mazo, A.B., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.88-98, In Russian. 8 refs.
Glazyrin, G.E.
Mountain glaciers, Glacier ice, Ice volume, Mathematical models.

41-780
Results of studying mass balance of Golubin Glacier in 1972-1981. [Rezul'taty issledovaniia balansa massy lednika Golubina v 1972-1981 gg.]
Ermolov, A.A., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.98-102, In Russian. 3 refs.
Solodkov, P.A., Firsov, M.I.
Mountain glaciers, Glacier ice, Ice volume, Mass balance.

41-781
Experimental determination of water movement in the Firn layers of Abramov Glacier. [Eksperimental'noe opredelenie kharakteristik dvizheniia vody v firnovoĭ tolshche lednika Abramova]
Glazyrin, G.E., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.110-117, In Russian. 8 refs.
Zhuk, L.I., Kislov, B.V.
Glacial hydrology, Ablation, Glacier ice, Meltwater, Firn, Seepage, Experimentation.

41-782
Long period regime of a drifted snow field. [Mnogoletniĭ rezhim naveiannogo snezhnika]
Pertsiger, F.I., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.117-123, In Russian. 4 refs.
Snowdrifts, Snow accumulation, Glacier ice, Snow cover distribution, Snow depth, Metamorphism (snow).

41-783
Influence of morainal mantle on the formation of turbidity of glacial waters. [Vliianie morennogo pokrova na formirovanie mutnosti lednikovykh vod]
Tikhanovskaia, A.A., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.117, p.123-128, In Russian. 2 refs.
Lenkova, L.A.
Glacier surfaces, Meltwater, Runoff, Streams, Moraines, Turbidity.

41-784
Construction of foundations of low-rise buildings and structures on sagging ground. [Vozvedenie fundamentov maloetazhnykh zdaniĭ i sooruzheniĭ na prosadochnykh gruntakh]
Koroteev, D.V., Moscow, Strolizdat, 1986, 155p. (pertinent p. 80-135), In Russian. 7 refs.
Foundations, Piles, Concrete structures, Clays, Soil stabilization, Settlement (structural).

41-785
Scientific and technical progress in road construction. [Nauchno-tekhnicheskiĭ progress v dorozhnom stroitel'stve]
Aĭtmatov, I.T., ed, Frunze, Ilim, 1984, 188p., In Russian. For selected paper see 41-786. 4 refs.
Roads, Pavements, Thermal insulation, Ice formation, Frost heave, Ice prevention, Frost penetration, Cellular plastics, Thermal regime.

41-786
Influence of thermoinsulative layers on temperature regime of road pavements. [Vliianie teploizoliatsionnykh sloev na temperaturnyĭ rezhim dorozhnykh odezhd]
Duĭshenaliev, M., Nauchno-tekhnicheskiĭ progress v dorozhnom stroitel'stve (Scientific and technical progress in road construction) edited by I.T. Aĭtmatov, Frunze, Ilim, 1984, p.140-145, In Russian. 4 refs.
Ice prevention, Ice formation, Frost heave, Glaze, Thermal insulation, Frost penetration, Cellular plastics, Roads, Thermal regime, Pavements.

41-787
Remote sensing, the Arctic and Antarctica, scientific polar research, natural resources, hydrology, exploration and transportation techniques.
Thorén, R., *Sweden. Forsvarents forskningsanstalt. Rapport*, Apr. 1986, B 60005-M7, 43p., With Swedish summary.
Research projects, Remote sensing, Sea ice, Natural resources, Ice conditions, Photointerpretation, Oceanography, Ice navigation, Underwater acoustics, Seismic surveys, Polar regions.
A brief review of antarctic climate, oceanography, and natural marine and mineral resources is offered in Ch. 2 of this report. Chapter 3 includes parts of a speech, delivered by the Swedish delegate at a workshop on the Antarctic Treaty System in 1985, with some Swedish viewpoints on same.

41-788
Ice effects on arctic offshore structures.
Bruce, J.C., et al, *Ocean industry*, May 1983, 18(5), p.14-15.
Allyn, F.B.
Ice loads, Offshore structures, Artificial islands, Ice pressure, Ice override, Ice solid interface, Slope orientation, Beaufort Sea.

41-789
Engines and installations for arctic supply vessels.
Norwegian shipping news, Mar. 25, 1983, 39(4), p.62-63, For another version see 38-2669.
Engines, Cold weather operation, Icebreakers, Ice nagivation, Ships, Air temperature.

41-790
Stresses in the hydraulic backfill from analytical calculations and *in-situ* measurements.
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41-792
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Nikleva, S.
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Granat, L.
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Dasch, J.M., Kopple, R.V.
Snow composition, Air pollution, Snowfall, Chemical analysis, Winter, Rain, United States—Michigan.

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Landslides in Alaska: a bibliography of the literature describing landslides and other forms of slope instability.
Galloway, J.P., *U.S. Geological Survey. Open-file report,* 1986, No.86-329, 54p.
Landslides, Slope stability, Avalanche erosion, Bibliographies, Geological processes, Mudflows, Earthquakes, Ice mechanics, Pipelines, Rock glaciers, United States—Alaska.

41-798
Hydrologic conditions in the Klatt Bog area, Anchorage, Alaska.
Glass, R.L., *U.S. Geological Survey. Water-Resources Investigations. Report,* 1986, No.85-4330, 19p., 9 refs.
Glacial hydrology, Runoff, Hydrology, Stream flow, Peat, Precipitation (meteorology), Seasonal variations, United States—Alaska—Anchorage.

41-799
Engineering surveys along the Trans-Alaska Pipeline.
Godfrey, R.N., et al, *U.S. Army Cold Regions Research Engineering Laboratory,* Sep. 1986, SR 86-28, 85p., ADA-173 853, 4 refs.
Enton, R.A.
Permafrost beneath structures, Cold weather construction, Pipelines, Freeze thaw cycles, Engineering, Permafrost beneath roads, Design criteria, Environmental protection, Climatic factors, Thaw depth, United States—Alaska.
During the spring of 1976, environmental engineering investigations along the Alyeska Pipeline Haul Road and TAPS (Trans-Alaska Pipeline System) Road were initiated by CRREL in conjunction with the Federal Highway Administration and the Alaska Department of Highways. The three-year research project had two general objectives: 1) to systematically obtain data on selected highway, airfield and pipeline workpad test sites and adjacent terrain to establish the rates and types of modifications in permafrost-dominated regions, and 2) to provide the basis for improved design criteria and specifications governing road, airfield and workpad construction and restoration in permafrost zones that are influenced by many different seasonal climatic regimes.

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Ice rumples on Ronne Ice Shelf, Antarctica.
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Ice shelves, Ice override, Grounded ice, Antarctica—Ronne Ice Shelf.
Field studies have been made of ice rumples covering about 2300 sq km between Korff and Henry ice rises on Ronne Ice Shelf, Antarctica. These are the most extensive ice rumples identified on any ice shelf. An ice flow velocity of 51 m/a was determined, indicating a much reduced flow compared with the rest of Ronne Ice Shelf. Most, if not all the ice movement appears to be due to basal sliding. The ice rumples exhibit a simple grounding line geometry, which, together with their simple bedrock and surface topography, makes them a useful site for developing models of ice shelf flexure and basal sliding. Simple calculations suggest that the restraint exerted on the ice shelf by the ice rumples could be as important as that exerted by the adjacent Korff Ice Rise. (Auth.)

41-801
Utilization of the stress intensity factor (K sub IC) in a model for rock fracture during freezing: an example from Signy Island, the Maritime Antarctic.
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Frozen rocks, Fracturing, Thermal stresses, Signy Island.
A recent theoretical model to explain rock fracture during freezing offers a potentially valuable means for explaining weathering in the field. The model utilizes the stress intensity factor, and a value for this is derived for quartz-micaschist, the main rock on Signy Island. It is shown that the main problem of the model for field applications is the attainment of a saturated state. However, it does offer a theoretical framework against which field data can be evaluated, and it provides a mechanism to explain why the cliff faces are mainly unweathered whilst loose talus blocks show extensive breakdown. (Auth.)

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Lednicer, D.A.
Propellers, Helicopters, Aircraft icing, Ice growth, Wind tunnels, Ice cover thickness, Unfrozen water content, Temperature effects.

41-803
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Ice cover thickness, Seismic surveys, Profiles, Computer applications, Seasonal variations, Distribution.

41-804
Traces of Icelandic eruptions in the Greenland Ice Sheet.
Hammer, C.U., *Jökull,* 1984, No.34, p.51-65, 23 refs.
Ice sheets, Air pollution, Impurities, Volcanoes, Aerosols, Stratigraphy, Chemical analysis, Greenland.
Information in polar ice sheets on long range transported volcanic debris is discussed. Acidity data from the Greenland Ice Sheet are presented, which indicate a possible relation between the volcanic fall-out pattern on Greenland from a past eruption and the latitude zone of the eruption site. The potential of future volcanological research via the polar ice sheets is discussed, as are the major differences between the Greenland and antarctic ice sheet. (Auth. mod.)

41-805
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Jaksch, K., *Jökull,* 1984, No.34, p.97-103, In German with English summary. 11 refs.
Glacial deposits, Glacier oscillation, Moraines, Age determination, Lichens, Iceland—Vatnajökull.

41-806
Tungnarjökull profile surveys 1959-1979. [Tungnárjökull—langskurdarmaelingar 1959-1979],
Freysteinsson, S., *Jökull,* 1984, No.34, p.131-139, In Icelandic with English summary. 11 refs.
Glacier surveys, Glacier surges, Profiles, Climatic changes, Glacier oscillation, Glacial rivers, Iceland—Tungnarjökull.

41-807
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Glacier surveys, Seismic surveys, Ice sheets, Earthquakes, Meltwater, Detection, Subglacial drainage, Iceland—Vatnajökull.

41-808
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Jónsson, H.H., *Jökull,* 1984, No.34, p.159-164, In Icelandic with English summary.
Avalanche formation, Accidents, Damage, Statistical analysis, Iceland.

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41-810
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41-811
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Savkin, V.M., Kaskevich, L.N.
Lakes, Landslides, Shoreline modification, Permafrost beneath lakes.

41-812
Experience in studying hydrographic indices of rivers in the Irtysh taiga. [Opyt indikatsionnykh gidrograficheskikh issledovaniĭ rek taezhnogo Priirtysh'ia],
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41-813
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Taiga, Rivers, Land reclamation, Paludification, Drainage, Permafrost distribution.

41-814
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41-815
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Runoff, Permafrost distribution, Snow cover distribution, Snow water equivalent, River basins, USSR—Yakutia.

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Kaderov, E.A.
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41-825
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41-826
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Cuvelier, C., et al, *Journal of fluid mechanics*, Aug. 1986, Vol.169, p.1-26, 44 refs.
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Günter, M.
Concrete strength, Concrete freezing, Concrete curing, Salting, Cement admixtures, Chemical ice prevention, Humidity, Frost action.

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Sea ice distribution, Remote sensing, Microwaves, Ice conditions, Ice edge, Mapping, Bering Sea.

41-834
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Sea ice distribution, Microwaves, Ice conditions, Ice cover thickness, Freeze thaw cycles, Radiometry, Seasonal variations, Bering Sea, Greenland Sea.

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Ice surveys, Remote sensing, Sea ice distribution, Computer applications, Measuring instruments, Mapping.

41-836
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Bolov, V.R., ed, *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1985, Vol.57, 108p., In Russian. For individual papers see 41-837 through 41-848. Refs. passim.
Albedo, Plant ecology, Cryogenic soils, Avalanche engineering, Mudflows, Ecosystems, Measuring instruments, Snow physics, Slope processes, Mapping, Soil temperature, Alpine landscapes, Snow cover distribution.

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Runich, A.V., *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1985, Vol.57, p.3-7, In Russian. 6 refs.
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41-842
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41-844
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41-845
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41-846
Studying the formation of glacier pollution. Field instruments for taking ice and aerosol samples. [K voprosu ob issledovanii formirovaniia zagriaznenii lednikov. Ekspeditsionnye pribory dlia zabora prob l'da i aerozolei],
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Glacier ice, Ice sampling, Ice composition, Snow samplers, Snow composition, Aerosols, Ice coring drills, Air pollution, Measuring instruments, Water pollution.

41-847
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41-848
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Ice scoring, Icebergs, Ocean bottom, Mathematical models, Forecasting, Underground facilities, Penetration.

41-850
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Melting, Phase transformations, Liquid solid interfaces, Conduction, Convection, Analysis (mathematics).

41-851
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41-852
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41-853
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Snow cover distribution, Remote sensing, Radiometry, Infrared radiation, LANDSAT, Snow density, Snow water content.

41-855
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Nitrogen control in the form of ammonia removal or conversion is required, or will be required, for a significant number of military wastewater treatment systems. This report presents a summary of engineering criteria for those processes in most common use at military facilities in the cold regions. These processes include: trickling filters, treatment ponds, rotating biological contactors (RBC) and activated sludge. A design example is presented for each case. All four processes can achieve significant levels of ammonia removal or conversion. If ammonia discharge limits are 0.5 mg/L or less it may be necessary to use the activated sludge process. Trickling filters or RBC units are recommended for higher (> 1 mg/L) discharge limits. Pond systems are suitable for seasonal ammonia removal in cold climates.

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Automatic weather stations (AWS) provide surface weather observations for specific meteorological experiments on Antarctica. The meteorological data collected and presented here are air temperature (deg C), wind speed (m per s), and wind direction (deg true) at a nominal height of 3 m, and air pressure (millibars) at the electronics enclosure usually 1.5 m above the surface. Data are received by the Argos data collection system on the NOAA series of polar orbiting satellites. AWS locations are shown on a map, and tabulated annual and monthly data summaries are presented.

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41-911
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41-915
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General outline of the botanical investigations on Bouvetöya.
Engelskjön, T., *Norsk Polarinstitutt. Skrifter*, 1986, No.185, p.5-9, 8 refs.
Research projects, Plants (botany), Topographic features, Bouvet Island.
The geographical situation and nature of Bouvetöya are briefly outlined. Botanical field work and collecting by the Norwegian Antarctic Research Expeditions are reviewed. The details of bryophyte and lichen occurrences are now well documented for this part of the maritime Antarctic, whereas the algal and micromycete floras are still in need of exploration. (Auth.)

41-917
Bryophytes on Bouvetöya.
Bell, B.G., et al, *Norsk Polarinstitutt. Skrifter*, 1986, No.185, p.11-22, 24 refs.
Blom, H.H.
Mosses, Classifications, Bouvet Island.
The first major collection of bryophytes from Bouvetöya is described. Two hundred specimens of hepatics and mosses have been examined and are referred to taxa using currently available nomenclature and descriptions. Of the three hepatic and eleven moss genera reported, four, *Andreaea, Bryum, Dicranoweisia* and *Schistidium*, include several taxa which were extremely difficult to identify. These and other species-related problems requiring detailed taxonomic revision in antarctic regions are identified. Taxonomic notes are provided where the Bouvetöya material differs from the appropriate published description. Notes on habitats and associated plant assemblages are provided for each taxon together with lists of specimens examined. (Auth.)

41-918
Macrolichens of Bouvetöya.
Jörgensen, P.M., *Norsk Polarinstitutt. Skrifter*, 1986, No.185, p.23-34, 33 refs.
Lichens, Plants (botany), Classifications, Bouvet Island.
Twelve species of foliose or fruticose lichens are reported from Bouvetöya, all for the first time. For some of them their known ranges of distribution have been considerably extended. (Auth.)

41-919
Crustose lichens of Bouvetöya.
Övstedal, D.O., *Norsk Polarinstitutt. Skrifter*, 1986, No.185, p.35-56, 41 refs.
Plants (botany), Lichens, Classifications, Bouvet Island.
Thirty-two crustose lichen species were recorded, belonging to 20 genera. The genus *Bouvetiella* with the species *B. pallida*, and the species *Arthonia subantarctica, Arthopyrenia maritima, Buellia bouvetii* and *Caloplaca tenuis* are described as new. One taxon, tentatively *"Lecidea"*, is not allocated to genus or species, and two other taxa are not definitely allocated to species. (Auth.)

41-920
Lichenicolous ascomycetes from Bouvetöya.
Övstedal, D.O., et al, *Norsk Polarinstitutt. Skrifter*, 1986, No.185, p.57-60, 11 refs.
Hawksworth, D.L.
Plants (botany), Lichens, Classifications, Bouvet Island.
Five lichenicolous ascomycetes are reported from Bouvetöya, of which three are described as new: *Clypeococcum placopsiiphilus, Didymella epimelanostola* and *Phaeospora subantarctica*. (Auth.)

41-921
***Lamprospora miniatopsis* Spooner, a bryophilous discomycete from Bouvetöya.**
Schumacher, T., *Norsk Polarinstitutt Skrifter*, 1986, No.185, p.61-64, 9 refs.
Plants (botany), Fungi, Classifications, Bouvet Island.
The operculate discomycete *Lamprospora miniatopsis* Spooner, growing in turves of *Tortula excelsa*, is recorded from Bouvetöya. The species is compared with other reticulate-spored *Lamprospora* species being associated with the bryophyte genus *Tortula*. The new combination *Lamprospora retispora* (Hazerott & Thatel) T. Schumacher is necessitated. (Auth.)

41-922
Supralittoral, freshwater and terrestrial algal vegetation of Bouvetöya.
Klaveness, D., et al, *Norsk Polarinstitutt. Skrifter*, 1986, No.185, p.65-69, 18 refs.
Rueness, J.
Plants (botany), Classifications, Algae, Bouvet Island.
Based on available collections, the algal taxa occurring on Bouvetöya are reviewed, with short descriptions and comments. Cryoseston communities are well developed and *Prasiola* spp. are important in terrestrial plant communities. (Auth.)

41-923
Phytogeographical relations of the cryptogamic flora of Bouvetöya.
Engelskjön, T., et al, *Norsk Polarinstitutt. Skrifter*, 1986, No.185, p.71-79, 52 refs.
Jörgensen, P.M.
Ecology, Plants (botany), Distribution, Bouvet Island.
The flora of Bouvetöya is basically an impoverished version of that found farther west in the maritime Antarctic. It seems to have reached the island by trans-oceanic dispersal during the Quaternary. The importance of the westwind drift and of birds as agents for long distance dispersal is emphasized. Nearly one third of the lichens have a bipolar or cosmopolitan distribution, the remainder belonging to a Southern Hemisphere element which has connections to Lesser Antarctica and the Magellanic region. (Auth.)

41-924
Arctic/cold weather operations symposium, 1985; proceedings.
U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985, Washington, D.C., Dept. of the Navy, [1986], 542p., ADA-168 714, Refs. passim. For individual papers see 41-925 through 41-954.
Military operation, Cold weather operation, Ship icing, Ice navigation, Ice loads, Ice accretion, Countermeasures, Ice removal, Ice prevention, Meetings.

41-925
Overview of the Cold Weather Program.
Kordenbrock, J.U., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.61-82. ADA-168 714.
Cold weather operation, Military operation, Ship icing, Ice navigation, Countermeasures, Research projects.

41-926
Arctic environment.
Reshew, J.W., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.83-100. ADA-168 714.
Military operation, Cold weather operation, Ice conditions, Ice navigation, Weather forecasting, Acoustics, Remote sensing.

41-927
Seaway performance improvement program.
Bubeck, R.B., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.101-122. ADA-168 714.
Military operation, Cold weather operation, Ice navigation, Ships, Design, Marine navigation, Ocean environments.

41-928
Recent encounters with topside icing.
Zahn, P.B., et al, U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.123-147, ADA-168 714, 14 refs.
Voelker, R.P.
Icebreakers, Ship icing, Cold weather operation, Countermeasures, Safety, Photography, Air temperature, Wind velocity, Ocean waves, Water temperature, Sea water.

41-929
SHAREM cold weather experience.
Oakes, J.R., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.149-161. ADA-168 714.
Cold weather operation, Military operation, Marine transportation, Submarines, Ice edge.

41-930
Preparation for ship helo operations in the polar/subpolar regions.
Wendt, P.A., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.165-173. ADA-168 714.
Icebreakers, Helicopters, Cold weather operation, Ice conditions, Cold weather survival.

41-931
Considerations for propellers and propulsion plants operating in northern latitudes.
Lecourt, E.J., Jr., et al, U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.175-182. ADA-168 714.
Zahn, P.B.
Ice navigation, Ice loads, Ice conditions, Propellers, Impact strength, Ice solid interface, Velocity.

41-932
LAMPS MK III environmental capabilities.
Olmstead, J., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.185-200. ADA-168 714.
Military operation, Cold weather operation, Ship icing, Ice conditions, Ice prevention, Helicopters, Countermeasures, Propellers.

41-933
Engineering program on anti-de-icing of the KAST track.
Boston, D.A., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.201-214. ADA-168 714.
Cold weather operation, Aircraft icing, Equipment, Ice prevention, Design, Ice removal, Countermeasures.

41-934
Underway replenishment in cold weather.
Lyon, G., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.215-221, ADA-168 714, 5 refs.
Ship icing, Military operation, Cold weather operation, Ice removal, Snow removal, Winter maintenance, Equipment.

41-935
Degradation of surface ship operations in arctic/cold weather environments.
Bales, S.L., et al, U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.223-237, ADA-168 714, 3 refs.
Elliott, L.R., Thomas, W.L., III, Taylor, D.W.
Military operation, Cold weather operation, Ship icing, Design, Ice prevention.

41-936
Sea spray icing: a review of current models.
Ackley, S.F., MP 2163, U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.239-262, ADA-168 714, 11 refs.
Ship icing, Sea spray, Heat flux, Ice accretion, Forecasting, Mathematical models, Velocity, Brines, Fog, Ice cover thickness.

41-937
Anti-icing and de-icing of naval surface ships.
Garbe, G.H., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.263-282, ADA-168 714, 11 refs.
Ship icing, Ice prevention, Ice removal, Military operation, Cold weather operation, Submarines, Ice cover effect, Ice loads, Countermeasures.

41-938
Prevention and retardation of ice formation at sea.
Minasian, D.T., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.283-295. ADA-168 714.
Ship icing, Military operation, Cold weather operation, Ice prevention, Ice adhesion, Ice formation, Ice removal, Countermeasures.

41-939
Arctic ice impact assessment for naval surface combatants.
Devine, E.A., et al, U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.297-347, ADA-168 714, 40 refs.
Kinports, K.J.
Ice navigation, Military operation, Cold weather operation, Ice loads, Impact strength, Design criteria, Ships, Velocity, Ice conditions, Ice cover strength.

41-940
Cold weather clothing.
Wojtaszek, R., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.349-354. ADA-168 714.
Military operation, Cold weather survival, Clothing, Marine transportation.

41-941
Arctic surface warfare hovercraft.
Schuler, J.L., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.355-377. ADA-168 714.
Air cushion vehicles, Cold weather operation, Military operation, Ice navigation.

41-942
Ship icing experiment: a means for identifying and solving cold weather operational problems.
Rogalski, R., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.379-406. ADA-168 714.
Ship icing, Military operation, Cold weather operation, Sea spray, Experimentation, Models.

41-943
NAWS—a hull stress monitoring system for arctic ships.
Kendrick, A., et al, U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.407-419. ADA-168 714.
Carter, J.
Ice navigation, Ice conditions, Military operation, Remote sensing, Cold weather operation.

41-944
Arctic environmental support.
Denner, W., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.429-434. ADA-168 714.
Cold weather operation, Military operation, Ship icing, Climatic factors, Forecasting, Ice navigation.

41-945
Northern latitude logistic support.
Kover, D., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.435-438. ADA-168 714.
Cold weather operation, Logistics, Icing, Equipment, Military operation.

41-946
Superstructure icing: non-suitability of current forecasting aids for navy ships.
Jeck, R.K., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.439-445. ADA-168 714.
Ship icing, Military operation, Forecasting, Sea spray, Wind factors, Cold weather operation, Temperature effects.

41-947
Bath iron works corporation cold weather operations studies for the CG 47 class cruiser program.
Crowley, J.D., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.447-451. ADA-168 714.
Ship icing, Military operation, Cold weather operation, Maintenance.

41-948
Spray ice bonding to superstructure coatings.
Sackinger, W.M., U.S. Navy Symposium on Arctic/-Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.453-455. ADA-168 714.
Ship icing, Sea spray, Ice removal, Ice adhesion, Fog, Coatings.

41-949
Marine gas turbine inlet de-icing.
Reinauer, G.A., U.S. Navy Symposium on Arctic/-Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.457-461. ADA-168 714.
Cold weather operation, Military operation, Engines, Ice prevention, Ice removal, Snow removal, Countermeasures.

41-950
Arctic vessel research laboratory and program.
Jeffrey, N.E., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.467-468. ADA-168 714.
Cold weather operation, Military operation, Ships, Laboratories, Research projects, Ice physics, Ice solid interface.

41-951
Coast Guard's new polar icebreaker.
Williams, B., U.S. Navy Symposium on Arctic/Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.473-482. ADA-168 714.
Icebreakers, Ice breaking, Design.

41-952
Modeling of spray ice accretion experiments.
Sackinger, W.M., U.S. Navy Symposium on Arctic/-Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.487-491. ADA-168 714.
Ship icing, Sea spray, Ice accretion, Heat transfer, Models, Experimentation.

41-953
Ice islands as locations for arctic data collection.
Sackinger, W.M., U.S. Navy Symposium on Arctic/-Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.493-497. ADA-168 714.
Ice islands, Floating ice, Drift, Remote sensing, Pack ice.

41-954
Freeze protection and temperature maintenance of ships, shipborne equipment and electronic systems.
Roberts, J., et al, U.S. Navy Symposium on Arctic/-Cold Weather Operations of Surface Ships, Dec. 3-4, 1985. Proceedings, Washington, D.C., Dept. of the Navy, [1986], p.500-542. ADA-168 714.
Gazeley, M.
Frost protection, Ship icing, Equipment, Ice accretion, Heat balance, Electronic equipment, Countermeasures, Heat loss, Heating.

41-955
Permafrost environment.
Harris, S.A., Totowa, NJ, Barnes & Noble Books, 1986, 276p., Refs. p.235-270.
Permafrost distribution, Freeze thaw cycles, Permafrost beneath structures, Climatic changes, Subsea permafrost, Artificial islands, Agriculture, Water supply, Drilling, Cold weather construction.

41-956
Implementation of the United States Arctic Research and Policy Act of 1984.
Brown, J., Arctic policy. Papers presented at the Arctic Policy Conference, Sep. 19-21, 1985, Centre for Northern Studies and Research. Edited by M.S. Stenbaek, Montreal, McGill University, 1986, p.155-168, 6 refs.
Legislation, Research projects, Polar regions.

41-957
Geological literature of the Alaska Peninsula to 1985.
Wilson, F.H., et al, *U.S. Geological Survey. Open-file report*, 1986, No.86-176, 113p.
Gajewski, S.Z., Angeloni, L.A.
Geology, Minerals, Mining, Bibliographies, United States—Alaska—Alaska Peninsula.

41-958
Danish and US geophysical measurements in Greenland and surrounding areas related to arctic radiopropagation.
Taagholt, J., *AGARD conference proceedings*, [1985], No.382, p.(7.1)1-(7.1)12, 19 refs.
Radio waves, Wave propagation, Military operation, Snow, Rain, Conduction, Atmospheric attenuation, Reflectivity, Greenland, Greenland Sea.

41-959
Measurements of the north polar cap of Mars and the Earth's Northern Hemisphere ice and snow.
Foster, J., et al, *Earth, moon, and planets*, July 1986, 35(3), p.223-235, 26 refs.
Owe, M., Capen, C.
Ice sheets, Extraterrestrial ice, Snow cover distribution, Mars (planet), Polar regions, Seasonal variations, Periodic variations.

41-960
High-pressure cell for luminescence studies of condensed phases at low temperatures.
Variano, B.F., et al, *Review of scientific instruments*, Mar. 1986, 57(3), p.497-498, 8 refs.
Brenner, H.C., Daniels, W.B.
Luminescence, Low temperature research, Optical properties, High pressure tests, Measuring instruments, Fibers.

41-961
Hydraulic effects at the glacier bed and related phenomena.
International Workshop on Hydraulic Effects at the Glacier Bed and Related Phenomena, Interlaken, Switzerland, Sep. 16-19, 1985, *Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1986, No.90, 148p., Refs. passim. Consists of abstracts of papers and discussions.
Glacier beds, Glacier surges, Glacial hydrology, Subglacial drainage, Basal sliding, Water pressure, Water flow, Hydraulics, Deformation.

41-962
Antarctica: measuring glacier velocity from satellite images.
Lucchitta, B.K., et al, *Science*, Nov. 28, 1986, 234(4780), p.1105-1108, 19 refs.
Ferguson, H.M.
Glacier flow, Flow rate, Spaceborne photography, Antarctica—Byrd Glacier.
Many Landsat images of Antarctica show distinctive flow and crevasse features in the floating part of ice streams and outlet glaciers immediately below their grounding zones. Some of the features, which move with the glacier or ice stream, remain visible over many years and thus allow time-lapse measurements of ice velocities. Measurements taken from Landsat images of features on Byrd Glacier agree well with detailed ground and aerial observations. The satellite-image technique thus offers a rapid and cost-effective method of obtaining average velocities, to a first order of accuracy, of many ice streams and outlet glaciers near their termini. (Auth.)

41-963
Glacial geologic processes.
Drewry, D., London, Edward Arnold, 1986, 276p., Refs. p.238-257.
Glacial geology, Glacial erosion, Glacial hydrology, Glacier flow, Glacier melting, Glacial deposits, Sedimentation, Sea ice, Thermodynamics, Meltwater.

41-964
Ice strength indexer for model towing tanks.
Baker, D.N., *Transport Canada. Report*, June 1986, TP 7700E, TP7947E, 40p. + appends., 12p., With French summary. 10 refs. Includes summary report separately bound.
Ice strength, Ice mechanics, Ice models, Flexural strength, Ice breaking, Shear strength, Cracking (fracturing), Ice cover thickness, Tests, Towers.

41-965
Catalog of microfiche of Alaska natural resource and environmental materials.
Arctic Environmental Information and Data Center, Anchorage, AK, 1986, 167p.
Bibliographies, Natural resources, Environments, United States—Alaska.

41-966
Proceedings.
Northern Libraries Colloquy, 11th, Luleå, Sweden, 1986, Luleå, CENTEK, 1986, 210p., Refs. passim. For selected papers see 41-967 through 41-973.
Höiseth, T., ed, Haupt, A.-C., ed.
Research projects, Data processing, Ice conditions, Organizations, Snow surveys, Ice surveys, Cold weather operation, Polar regions.

41-967
Swedish and Nordic polar research.
Karlqvist, A., Northern Libraries Colloquy, 11th, Luleå, Sweden, June 9-12, 1986. Proceedings. Edited by T. Höiseth and A.-C. Haupt, Luleå, CENTEK, 1986, p.105-112.
Remote sensing, Weather observations, Polar regions, Research projects, Antarctica—Queen Maud Land.
Some general characteristics of the development of polar science are given. The role of the Nordic countries in this process is emphasized, the strong interest in Antarctica is also discussed, especially Queen Maud Land which is claimed as Norwegian territory. A few examples of the transition from traditional to modern polar science are discussed. (Auth. mod.)

41-968
Northern technical research at the University of Oulu.
Ukkola, A., Northern Libraries Colloquy, 11th, Luleå, Sweden, June 9-12, 1986. Proceedings. Edited by T. Höiseth and A.-C. Haupt, Luleå, CENTEK, 1986, p.113-118.
Offshore structures, Ice loads, Research projects, Ice conditions, Ice mechanics, Ice pressure, Organizations, Telecommunication, Finland.

41-969
Canadian sea ice information system CSIIS: an online computer database for sea ice and iceberg data.
Whittick, J.A., et al, Northern Libraries Colloquy, 11th, Luleå, Sweden, June 9-12, 1986. Proceedings. Edited by T. Höiseth and A.-C. Haupt, Luleå, CENTEK, 1986, p.119-124.
Guy, E.V.
Sea ice distribution, Ice conditions, Icebergs, Computer applications, Statistical analysis, Mapping, Canada.

41-970
Research on engineering in arctic and subarctic regions, the Cold Region Technology Center of Luleå University.
Lindmark, R., Northern Libraries Colloquy, 11th, Luleå, Sweden, June 9-12, 1986. Proceedings. Edited by T. Höiseth and A.-C. Haupt, Luleå, CENTEK, 1986, p.125-129.
Research projects, Engineering, Cold weather operation, Ice conditions, Frozen ground strength, Concrete strength, Steels, Human factors, Climatic factors, Sweden.

41-971
World Data Center A for Glaciology: activities and services.
Brennan, A.M., Northern Libraries Colloquy, 11th, Luleå, Sweden, June 9-12, 1986. Proceedings. Edited by T. Höiseth and A.-C. Haupt, Luleå, CENTEK, 1986, p.131-138, 1 ref.
Glaciology, Data processing, Remote sensing, Organizations, Snow surveys, Ice surveys, Avalanches, Sea ice.

41-972
Recent developments at the Arctic Science and Technology Information System.
Goodwin, R., Northern Libraries Colloquy, 11th, Luleå, Sweden, June 9-12, 1986. Proceedings. Edited by T. Höiseth and A.-C. Haupt, Luleå, CENTEK, 1986, p.145-148.
Ice surveys, Research projects, Oil spills, Organizations, Data processing, Bibliographies.

41-973
Arctic Research and Policy Act of 1984 and its significance for the library and information community.
Thuronyi, G.T., et al, Northern Libraries Colloquy, 11th, Luleå, Sweden, June 9-12, 1986. Proceedings. Edited by T. Höiseth and A.-C. Haupt, Luleå, CENTEK, 1986, p.183-190, 6 refs.
Brown, J.
Legislation, Research projects, Organizations, Polar regions, Bibliographies.

41-974
Late Wisconsinan glacial history of northeastern Wisconsin and western Upper Michigan.
Peterson, W.L., *U.S. Geological Survey. Bulletin*, 1986, No.1652, 14p., Refs. p.13-14.
Glacier oscillation, Glacial geology, Glacial lakes, Paleoclimatology, Glacier flow, United States—Wisconsin, United States—Michigan.

41-975
On the scale effect in ice mechanics.
Bercha, F.G., Canadian Congress of Applied Mechanics, 6th, Vancouver, May 29-June 3, 1977, [1977], p.65-66, 8 refs. Less complete version in Ice Problems Workshop, Calgary, 1977. Proceedings, p.57-59.
Ice mechanics, Ice solid interface, Structures, Ice cover thickness, Ice salinity, Ice temperature.

41-976
Hydrologic and land sciences applications of NOAA polar orbiting satellite data.
Matson, M., et al, Washington, D.C., NOAA, Jan. 1985, 20p., Refs. passim.
Parmenter-Holt, F.
Snow cover distribution, Remote sensing, Geology, River basins, Floods, Vegetation, Mapping, Fires, Volcanoes, Seasonal variations, Detection.

41-977
Some latest developments in icebreaker technology.
Schwarz, J., *Journal of energy resources technology*, June 1986, 108(2), p.161-167, 22 refs. For another source see 39-2431.
Icebreakers, Ice breaking, Ice conditions, Ice cover thickness, Velocity.

41-978
Model test of an ice class bulk carrier with the Thyssen/Waas bow form.
Freitas, A., et al, *Journal of energy resources technology*, June 1986, 108(2), p.168-172, 8 refs. For another source see 39-2432.
Nishizaki, R.S.
Icebreakers, Ice breaking, Models, Tests, Ships.

41-979
Determination of sea ice concentration from AVHRR visible and near infrared imagery.
Yamanouchi, T., et al, *Antarctic record*, July 1986, 30(2), p.89-102, In English with Japanese summary. 15 refs.
Sea ice distribution, Spaceborne photography, Ice conditions, Albedo.
Sea ice concentrations are determined from the visible and near infrared albedo of the AVHRR imagery. One method used only one channel data to interpolate the ice concentration between 0 and 100% corresponding to the open water and the snow cover, respectively. This method yields an uncertainty owing to the variation of albedo by the surface condition change. Another method used two-channel data to derive not only the ice concentration but also the ice surface condition and can eliminate uncertainties involved in the first method. The ice surface condition is expressed by "snow coverage". Air photographs are compared with the satellite data. Time variations of the concentration and surface condition of summer sea ice are discussed. (Auth.)

41-980
Activities of the wintering party of the 25th Japanese Antarctic Research Expedition in 1984-1985.
Hirasawa, T., *Antarctic record*, July 1986, 30(2), p.113-137, In Japanese with English summary. 1 ref.
Expeditions, Atmospheric physics, Traverses, Marine biology, Glaciology, Antarctica.
The 25th wintering party of the Japanese Antarctic Research Expedition (1984-1985) consisting of thirty-five members was in charge of research activities around Showa and Mizuho Stations from Feb. 1984 to Jan. 1985. The inland traverse party made a 126-day trip from 4 Oct. 1984 to 6 Feb. 1985 covering about 3000 km in eastern Queen Maud Land. The main object was to reach the second highest dome of the Antarctic ice sheet around 77 S, 35 E. However, the traverse had to be suspended at 75 S, 35 E. Ice core drilling at Mizuho Station attained a depth of 700.6 m and intensive *in situ* observations were made on the core samples obtained. The coastal party traversed more than 1000 km on the sea ice around the southeastern part of Lutzow-Holm Bay. Studies of biological processes in the coastal ecosystem were carried out in conjunction with the international BIOMASS program. Three S-310JA type rockets were fired at Showa Station. Objects of measurements were auroral particles, electron densities, magnetic fields and auroral images in aurora. Through the successful rocket flights, significant information revealing the physical nature of auroras was obtained. (Auth.)

41-981
Activities of Japanese earth science research in the McMurdo Sound region in the 1985-1986 season.
Kaminuma, K., *Antarctic record*, July 1986, 30(2), p.138-147, In Japanese with English summary. 8 refs.
Seismic surveys, Volcanoes, Gravity, Antarctica—McMurdo Sound, Antarctica—Ross Island, Antarctica—Erebus, Mount.
Continuous seismic observations have been carried out since Dec. 1980 by a cooperative International Mount Erebus Seismological Studies (IMESS) which includes Japan, the United States and New Zealand. Three Japanese participating in the IMESS visited the McMurdo Sound region where they conducted a series of scientific research programs during their tenures at McMurdo Station and Scott Base from 22 Nov. 1985 to 6 Jan. 1986. The Japanese team played back the seismic magnetic tapes which were recorded since Feb. 1985. Daily frequencies of eruptions and volcanic earthquakes occurring in and around Mount Erebus were counted and earthquakes were scaled to determine their locations. The volume of plume at the Erebus summit was watched from Scott Base. Two new gravity stations were established on Ross Island through cooperation between Japan and New Zealand. Gravity was measured at eight other points on Ross Island during the 1985-1986 field season. (Auth.)

41-982
Railroad foundation freezing—hazard and prevention. [Tielu luji donghai ji fangzhi],
Chao, Y., ed, Peking, Chinese Railroad Publishing Association, 1984, 382p., In Chinese with English table of contents enclosed. 26 refs.
Permafrost beneath roads, Railroads, Freeze thaw cycles, Foundations, Frost heave, Subgrades, Frozen ground mechanics, Settlement (structural), Soil creep, Countermeasures.

41-983
West Antarctic ice sheet dynamics.
Van der Veen, C.J., *American Geophysical Union. Transactions*, Oct. 22, 1985, 66(43), p.732-734, 3 refs.
Stresses, Ice sheets, Ice deformation, Ice shelves, Sea level, Climatic changes, Antarctica—West Antarctica.
Due to general interest in the effects of increasing atmospheric CO_2 concentration on the stability of the West Antarctic Ice Sheet, and in order to obtain an overall view of recent developments in this field and to give a survey of problems that are still unresolved, an international workshop was held May 6-8, 1985, in Utrecht, the the Netherlands. The main discussion topics and conclusions of the meeting are summarized.

41-984
Studies of plain and reinforced frozen soil structures.
Soo, S., East Lansing, Michigan State University, 1984, 299p., University Microfilms order No.-DA8415258, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Oct. 1984, p.1250.
Frozen ground strength, Sands, Loads (forces), Deformation, Soil creep, Temperature effects, Steel structures, Rheology.

41-985
Frost formation between closely spaced parallel plates.
Kamath, J., Ann Arbor, University of Michigan, 1985, 121p., University Microfilms order No.8600468, Ph.D. thesis. Refs. p.117-121. For abstract see Dissertation abstracts international, Vol.46, No.11, May 1986.
Ice formation, Plates, Frost, Temperature effects, Forecasting, Humidity, Mathematical models.

41-986
Effect of asphalt concrete overlays on the progression of durability cracking in Portland cement concrete.
Janssen, D.J., Urbana-Champaign, University of Illinois, 1985, 186p., University Microfilms order No.8600220, Ph.D. thesis. Refs. p.183-185. For abstract see Dissertation abstracts international, Vol.46, No.11, May 1986.
Concrete durability, Cracking (fracturing), Bituminous concretes, Freeze thaw cycles, Cement admixtures, Pavements, Heat transfer, Thermal regime, Tests, Moisture.

41-987
Influence of geocryological conditions of the construction site on the design of the Vilyuy Hydroelectric Power Plant No.3. [Vliianie geokriologicheskikh osobennostei raiona stroitel'stva na proektnye resheniia po Viliuiskoi GES-III],
Ziskovich, V.Kh., et al, *Energeticheskoe stroitel'stvo*, Aug. 1986, No.8, p.53-55, In Russian.
Krivonogova, N.F.
Permafrost beneath structures, Industrial buildings, Hydraulic structures, Electric power, Permafrost control.

41-988
Synoptic-scale influences of snow cover and sea ice.
Ross, B., et al, *Monthly weather review*, Oct. 1986, 114(10), p.1795-1810, 27 refs.
Walsh, J.E.
Synoptic meteorology, Snow cover effect, Ice cover effect, Sea ice, Weather forecasting.

41-989
Botanical and geographic observations in lower reaches of the Enmyvaam River (Anadyr' River basin). [Botaniko-geograficheskie nabliudeniia v raione nizhnego techeniia reki Enmyvaam (Basseln reki Anadyr')],
Korobkov, A.A., et al, *Botanicheskii zhurnal*, Apr. 1984, 71(4), p.450-459, In Russian with English summary. Refs. p.458-459.
Sekretareva, N.A.
Alpine tundra, Taiga, Cryogenic soils, Nivation, Plant ecology, Ecosystems.

41-990
Phytocoenotic aspects of photosynthetic activities of steppe plants in eastern Hangay. [Fitotsenoticheskie aspekty fotosinteticheskoi deiatel'nosti rastenii (na primere stepnykh rastenii Vostochnogo Khangaia)],
Slemnev, N.N., *Botanicheskii zhurnal*, Apr. 1984, 71(4), p.460-473, In Russian with English summary. Refs. p.472.
Alpine landscapes, Cryogenic soils, Plant ecology, Ecosystems, Plant physiology, Photosynthesis.

41-991
Algoflora of the lower Yama River (Magadan Region). [K flore vodoroslei nizov'ia r. IAmy (Magadanskaia oblast')],
Kuz'min, G.V., *Botanicheskii zhurnal*, Apr. 1984, 71(4), p.513-521, In Russian.
Algae, Human factors, River basins, Plant ecology, Plant physiology, Ecosystems.

41-992
Floristic composition and phytocoenotic organization of algal groupings in Alpine steppes of northeastern Asia. [Osobennosti floristicheskogo sostava i fitotsenoticheskoi organizatsii vodoroslevykh gruppirovok gornykh stepei Severo-Vostochnoi Azii],
Pivovarova, Zh.F., *Botanicheskii zhurnal*, Apr. 1984, 71(4), p.521-527, In Russian. Refs. p.526-527.
Soil microbiology, Algae, Steppes, Cryogenic soils.

41-993
Frost fissures and their importance for soil genesis.
Kulikov, A.I., et al, *Soviet soil science*, May-June 1986, 18(3), p.41-44, Translated from Pochvovedenie. 11 refs.
Sobolev, S.D.
Frost shattering, Soil formation, Soil water migration, Soil chemistry, Geocryology.

41-994
Squid-based picovoltmeter for measuring resistance of metals at low temperatures and volt-ampere characteristics of superconductor structures.
Krasnopolin, I.IA., *Instruments and experimental techniques*, Nov.-Dec. 1985 (pub. June 86), 28(6, pt.2), p.1427-1431, Translated from Pribory i tekhnika eksperimenta. 6 refs.
Measuring instruments, Metals, Frost resistance, Electrical properties, Low temperature research.

41-995
Automatic low-temperature calorimeter.
Malyshev, V.M., et al, *Instruments and experimental techniques*, Nov.-Dec. 1985 (pub. June 86), 28(6, pt.2), p.1456-1459, Translated from Pribory i tekhnika eksperimenta. 5 refs.
Mil'ner, G.A., Sorkin, E.L., Shibakin, V.F.
Calorimeters, Low temperature research, Measuring instruments.

41-996
Engineering and geological investigations of saline soils. [Inzhenerno-geologicheskie issledovaniia zasolennykh gruntov],
Bakenov, B.B., et al, Moscow, Nedra, 1986, 245p., In Russian with abridged English table of contents enclosed. 32 refs.
Dzhumashev, U.R.
Saline soils, Engineering geology, Salinity, Hydrogeology, Salting, Land reclamation, Hydraulic structures, Underground pipelines, Soil stabilization, Foundations, Distribution.

41-997
Zones and excitons of cryocrystals. [Zony i eksitony kriokristallov],
Sobolev, V.V., Kishinev, Shtiintsa, 1986, 206p., In Russian with English summary, and English table of contents enclosed. 266 refs.
Crystals, Ice physics, Low temperature research, Ice crystals, Crystal growth, Solidified gases, Phase transformations, Theories, Experimentation, Hydrogen, Oxygen.

41-998
Geophysical exploration methods in the Arctic. [Geofizicheskie metody razvedki v Arktike],
Gaponenko, G.I., ed, Leningrad, 1978, 165p., In Russian. For selected papers see 41-999 through 41-1001. Refs. passim.
DLC QE70.G44
Aerial surveys, Magnetic surveys, Geophysical surveys, Oceanographic surveys, Polar regions, Arctic Ocean.

41-999
Allowing for variations in electromagnetic surveys of the Arctic Basin. [Uchet variatsiĭ pri aeromagnitnoĭ s"emke Arkticheskogo basseĭna].
Karasik, A.M., et al, Geofizicheskie metody razvedki v Arktike (Geophysical exploration methods in the Arctic) edited by G.I. Gaponenko, Leningrad, 1978, p.83-92, In Russian. 18 refs.
Sokolov, A.M.
Aerial surveys, Magnetic surveys, Arctic Ocean.

41-1000
Use of spectral-correlation analysis in preliminary stages of investigations. [Primenenie metodiki spektral'no-korreliatsionnogo analiza na predvaritel'nom etape issledovaniia].
Petrova, A.A., Geofizicheskie metody razvedki v Arktike (Geophysical exploration methods in the Arctic) edited by G.I. Gaponenko, Leningrad, 1978, p.93-98, In Russian. 3 refs.
Geological surveys, Geophysical surveys, Magnetic surveys, Arctic Ocean.

41-1001
Possibility of conducting high-frequency aeromagnetic surveys in Arctic shelf seas. [O vozmozhnosti provedeniia vysokotochnoĭ aeromagnitnoĭ s"emki v usloviiakh arkticheskikh shel'fovykh morei].
Palamarchuk, V.K., et al, Geofizicheskie metody razvedki v Arktike (Geophysical exploration methods in the Arctic) edited by G.I. Gaponenko, Leningrad, 1978, p.129-133, In Russian.
Aerial surveys, Magnetic surveys, Oceanographic surveys, Polar regions, Arctic Ocean.

41-1002
Calculating the mass of chemically altered rocks of probable age and chemical denudation rate, during the formation of primitively-cryogenic weathering crust (Khibiny Mountains taken as an example). [Metod chislennoĭ otsenki massy khimicheski izmenennoĭ gornoĭ porody, veroiatnogo vozrasta i skorosti khimicheskoĭ denudatsii pri formirovanii primitivno-kriogennoĭ kory vyvetrivaniia (na primere Khibin)].
IUrov, IU.L., *Akademiia nauk SSSR. Izvestiia. Seriia geologicheskaia*, June 1986, No.6, p.119-121, In Russian. 10 refs.
Permafrost weathering, Water erosion, Hydrothermal processes, Geochemistry.

41-1003
Reserves and structure of vegetational biomass in Alpine tundras of the northwestern Putorana plateau. [Zapasy i struktura rastitel'noĭ massy v gornykh tundrakh severo-zapada plato Putorana].
Deeva, N.M., *Botanicheskiĭ zhurnal*, June 1986, 71(6), p.789-794, In Russian. Refs. p.793-794.
Alpine tundra, Biomass, Soil microbiology, Algae, Soil erosion.

41-1004
Development of soil algae in felled areas of northern taiga. [Razvitie pochvennykh vodoroslei na vyrubkakh severnoĭ taĭgi].
Antipina, G.S., *Botanicheskiĭ zhurnal*, June 1986, 71(6), p.794-798, In Russian. 8 refs.
Forest soils, Cryogenic soils, Soil microbiology, Algae, Taiga.

41-1005
Effect of external turbulence on heat and mass transfer in boundary layers.
Zaĭtsev, S.A., et al, *Heat transfer—Soviet research*, July-Aug. 1985, 17(4), p.1-8, Translated from Protsessy turbulentnogo perenosa v reagiruiushchikh sistemakh. Materialy mezhdunarod. shkoly seminara. Minsk, Akad. Nauk BSSR, 1985.
Lebedev, A.B., Sekundov, A.N.
Boundary layer, Turbulent flow, Heat transfer, Mass transfer.

41-1006
Interaction of clouds with the surrounding aerosol medium.
Mazin, I.P., *Soviet meteorology and hydrology*, 1982, No.1, p.42-48, Translated from Meteorologiia i gidrologiia. 9 refs.
Cloud physics, Supercooled clouds, Aerosols, Nucleation, Ice nuclei.

41-1007
Use of ground generators of ice-forming aerosols in works on artificial enhancement of precipitation in mountain regions.
Laktionov, A.G., *Soviet meteorology and hydrology*, 1982, No.1, p.68-73, For Russian original see 36-3018. 9 refs.
Supercooled clouds, Artificial nucleation, Smoke generators, Cloud seeding.

41-1008
Classification of sea ice types with single-band (33.6 GHz) airborne passive microwave imagery.
Eppler, D.T., et al, *Journal of geophysical research*, Sep. 15, 1986, 91(C9), p.10,661-10,695, 32 refs.
Farmer, L.D., Lohanick, A.W., Hoover, M.
Sea ice, Microwaves, Brightness, Radiometry.

41-1009
On the spacing and draft distributions for pressure ridge keels.
Wadhams, P., et al, *Journal of geophysical research*, Sep. 15, 1986, 91(C9), p.10,697-10,708, 27 refs.
Davy, T.
Pressure ridges, Sea ice, Ice bottom surface.

41-1010
Large-scale short-period sea ice atmosphere interaction.
Cahalan, R.F., et al, *Journal of geophysical research*, Sep. 15, 1986, 91(C9), p.10,709-10,717, 29 refs.
Chiu, L.S.
Sea ice, Radiometry, Ice air interface, Variations.
Changes in the microwave brightness temperature measured by the Electrically Scanning Microwave Radiometer (ESMR) flown on board the *Nimbus V* satellite reveal large-scale sea ice fluctuations in the Antarctic marginal ice zone. These ice margin fluctuations are predominantly wave numbers 1-4, with phase speeds of about 3 m/s independent of wave number. The spatial pattern and eastward advection of the sea ice anomalies match those of the atmospheric sea level pressure, and are consistent with sea ice displacement due to surface wind stress. Examination of the outgoing longwave radiation indicates that suppression of high clouds in regions of increased sea ice increases the radiative cooling which contributes to maintaining the ice. Data from three winter seasons indicate about a one-third probability of occurrence of this large scale high frequency sea ice atmosphere interaction during any given 2-week period in winter. (Auth.)

41-1011
Seasonal ice extent on the northeast Newfoundland Shelf.
Symonds, G., *Journal of geophysical research*, Sep. 15, 1986, 91(C9), p.10,718-10,724, 24 refs.
Sea ice distribution, Ice heat flux, Ice temperature, Air temperature, Canada—Newfoundland Shelf.

41-1012
Automated extraction of pack ice motion from advanced very high resolution radiometer imagery.
Ninnis, R.M., et al, *Journal of geophysical research*, Sep. 15, 1986, 91(C9), p.10,725-10,734, 8 refs.
Emery, W.J., Collins, M.J.
Sea ice, Pack ice, Ice creep, Radiometry, Beaufort Sea.

41-1013
Water masses and circulation of the southern ocean. [Vodnye massy i tsirkuliatsiia IUzhnogo okeana].
Sarukhanian, E.I., et al, Leningrad, Gidrometeoizdat, 1986, 288p., In Russian with English summary. 268 refs.
Smirnov, N.P.
Drift, Ice conditions, Sea ice distribution, Ice sheets, Ice edge.
The book deals with the formation, localization and spreading of the southern ocean water masses and the methods of marking them out by an indication complex. The main circulation features determined by geostrophic calculations and those based on a diagnostic model, as well as characteristics derived from the data of drifting buoys, are described. An analysis of spatial structure and variability of the Antarctic Circumpolar Current and connected frontal polar zone is given on the basis of data obtained in different regions during the multiscale scientific experiments POLEX South and International Southern Ocean Research in 1975-1982. (Auth.)

41-1014
Survey of ultra-rapid cryofixation methods with particular emphasis on applications to freeze-fracturing, freeze-etching, and freeze-substitution.
Menco, B.P.M., *Journal of electron microscopy techniques*, 1986, Vol.4, p.177-240, Refs. p.224-240.
Freezing, High pressure tests, Cryobiology, Electron microscopy, Equipment, Time factor, Cryogenics, Freeze drying, Molecular structure.

41-1015
Distribution patterns of benthic microalgal standing stock at McMurdo Sound, Antarctica.
Dayton, P.K., et al, *Polar biology*, 1986, 6(4), p.207-213, 13 refs.
Algae, Plankton, Microbiology, Ice cover effect, Snow cover effect, Antarctica—McMurdo Sound.
During the austral summer of 1975-76 and winter of 1977 benthic and water column chlorophyll *a* and phaeopigments were measured at several sites along the east and west sides of McMurdo Sound. Estimates of *in situ* primary productivity were made. Additionally, water column samples were collected at 5 stations in the Ross Sea during Jan. 1976. Standing stock data are analyzed to identify seasonal and spatial patterns. Variability in algal standing stock was related to ambient light levels and appeared to be mediated by ice and snow cover whereby the highest algal standing stock was present under high light conditions (low ice and snow cover, shallow water, summer). Differences in published benthic invertebrate densities appear to be closely allied to differences in benthic primary production, and less so to *in situ* planktonic ice microalgal production. (Auth. mod.)

41-1016
Organism losses during ice melting: a serious bias in sea ice community studies.
Garrison, D.L., et al, *Polar biology*, 1986, 6(4), p.237-239, 13 refs.
Buck, K.R.
Microbiology, Sea ice, Ice melting, Ice cores, Cryobiology, Antarctica—Weddell Sea.
When ice samples are melted, microorganisms living within the brine inclusions are subjected to rapid and extreme changes in salinities. This procedure results in substantial losses of flagellates and ciliates. Most of these losses can be prevented if ice samples are melted in larger volumes of sterile sea water to buffer salinity and osmotic changes. Since most studies on the ice biota have ignored, or have been unable to avoid this bias, current views of the composition and activity of sea ice communities are based on assemblages over-representing organisms with rigid cell material. (Auth.)

41-1017
Simple and multiple loading of steel under normal conditions and at low temperatures. [Prostoe i slozhnoe nagruzhenie stali v usloviiakh normal'nykh i nizkikh temperatur].
Zhigalkin, V.M., et al, Fizika prochnosti i plastichnosti (Physics of strength and plasticity) edited by S.N. Zhurkov, Leningrad, Nauka, 1986, p.129-141, In Russian. 8 refs.
Usova, O.M., Shemiakin, E.I.
Steel structures, Low temperature tests, Cold stress, Brittleness, Loading, Strength, Elastic properties, Plastic deformation.

41-1018
Studying the state of massive rocks in areas of preliminary excavations cut in permafrost by the express method. [Izuchenie sostoianiia gornogo massiva v okrestnosti podgotovitel'nykh vyrabotok proĭdennykh v mnogoletnemerzlykh porodakh ekspress-metodom].
Umantsev, R.F., Tekhnologiia razrabotki moshchnykh plastov Kuzbassa (Technology of mining thick layers in the Kuznetsk Coal Basin) edited by M.V. Kurlenia, Novosibirsk, 1985, p.52-54, In Russian. 4 refs.
Mining, Permafrost thermal properties, Shaft sinking, Ventilation, Ground thawing, Thaw depth.

41-1019
Enhancement of antarctic stratospheric aerosol layer in winter: possible contribution of Aitken particle growth.
Iwasaka, Y., *Tokyo. National Institute of Polar Research. Memoirs*, Aug. 1986, Special issue No.42, p.143-151, 16 refs.
Stratosphere, Ice crystals, Ice formation, Antarctica—Showa Station.
Lidar measurements at Showa Station revealed that the content of stratospheric particles increased noticeably and that particle shape possibly was of ice crystal in winter. The increase in number of large particles, in addition to the deposition growth of ice particles, possibly contributes to the stratospheric particulate matter increase during winter. (Auth.)

41-1020
Recent changes in the glaciers of Heard Island.
Allison, I.F., et al, *Polar record*, Sep. 1986, 23(144), p.255-271, 33 refs.
Keage, P.L.
Glacier ablation, Glacier oscillation, Temperature variations, Climate, Kerguelen Islands.
Heard Island, a heavily glacierized volcanic island in the southern ocean, is 80% ice-covered, with glaciers descending from 2,400 m to sea level; major glaciers are up to 7 km long with areas exceeding 10 sq km. Much of the island was photographed from the air in 1947 and again in early 1980. Photographs and limited ground surveys record changes (mostly retreats) in glacier fronts. Retreat is most marked on the eastern flanks where former tidewater glaciers are now grounded inland. Glaciers on northern and windward western flanks still end in ice cliffs but have narrowed, glaciers and ice caps on Laurens Peninsula (maximum elevation 710 m) are up to 65% smaller. Nearby Iles Kerguelen and other southern islands with long climatic records have warmed significantly since the early 1960s. Surface and upper-air climatic data from Heard Island 1947-54 and records from automatic weather stations 1980-82 suggest that Heard too has warmed slightly, concurrently with a possible northward shift of low-pressure system tracks in this region. Temperatures have remained above average through the early 1980s and glacier retreat is expected to continue. (Auth.)

41-1021
Changes in precipitation chemistry at Dye-3, Greenland.
Finkel, R.C., et al, *Journal of geophysical research*, Aug. 20, 1986, 91(D9), p.9849-9855, 17 refs.
Langway, C.C., Jr., Clausen, H.B.
Ice cores, Ice composition, Impurities, Greenland—Dye 3.

41-1022
Numerical models of the Filchner-Ronne Ice Shelf: an assessment of reinterpreted ice thickness distributions.
Lange, M.A., et al, *Journal of geophysical research*, Sep. 10, 1986, 91(B10), p.10,457-10,462, 17 refs.
MacAyeal, D.R.
Ice shelves, Ice cover thickness, Mathematical models, Radio echo soundings.
Recent radio echo soundings of the Filchner-Ronne Ice Shelf by the German Antarctic Expedition, 1983/1984 suggest that previous ice thickness measurements may have misinterpreted an internal radio echo reflecting horizon as the true ice shelf bottom. This, and the analysis of total ice thickness from surface altimetry, suggests that a previously defined thin-ice region comprising approximatly 1/5 of the total ice shelf area may be underlain by a thick layer of possibly saline ice. One possible way to verify the existence of such a layer is by measurement of its influence on the ice shelf flow regime. Here we evaluate this influence by conducting finite element simulations of two alternative ice thickness configurations. We conclude that flow differences are sufficiently large to allow verification of the possible saline basal ice layer provided that surface strain rate measurements are conducted in certain key areas. (Auth.)

41-1023
Data sensitivities of sea ice drift and ocean stress in North Atlantic high latitudes.
Walsh, J.E., et al, *Journal of geophysical research*, Oct. 15, 1986, 91(C10), p.11,657-11,675, 33 refs.
Sea ice, Drift, Wind pressure, Ocean currents, Water pressure, Data processing.

41-1024
Ice pumps and their rates.
Lewis, E.L., et al, *Journal of geophysical research*, Oct. 15, 1986, 91(C10), p.11,756-11,762, 28 refs.
Perkin, R.G.
Engines, Ice melting, Freezing points, Ice shelves, Heat transfer, Antarctica—McMurdo Sound, Antarctica—Ross Ice Shelf.
An ice pump is a heat engine, driven by the change of freezing point with pressure, which will melt ice at depth in the ocean and deposit it at a shallower location; it is self-starting. Calculations of the maximum magnitude of this effect are made which show good agreement with field data available for sea and lake ice. The discussion is applied to the general case of a moving pack ice sheet with a well-mixed surface layer and to floating ice shelves. The rate of melt from an 11-m-deep pressure ridge keel due to ice pumping is estimated as 26 cm/year, and that from the front of the Ross Ice Shelf at McMurdo Sound is estimated as 5 m/year for the level of water movement noted in the authors' field observations. Far from the ice front, pumping between shelf areas of different thickness will still occur, with tidal motion providing the necessary water exchange, but its magnitude is now limited by the ability to remove the potentially stable layer of melt water out of the system. It is important to realize that the pumping does not depend on the availability of sensible heat in the water column and its effects are additional to any melting caused by the advection of warmer water to the ice-water interface. (Auth.)

41-1025
Physical oceanography near the North Pole.
Pounder, E.R., *Journal of geophysical research*, Oct. 15, 1986, 91(C10), p.11,763-11,773, 10 refs.
Ice islands, Drift stations, Water temperature, Salinity, Thermal conductivity, Oceanographic surveys, Arctic Ocean.

41-1026
Mesoscale circulations initiated by melting snow.
Lin, C.A., et al, *Journal of geophysical research*, Nov. 20, 1986, 91(D12), p.13,299-13,302, 7 refs.
Stewart, R.E.
Atmospheric circulation, Snow melting, Heat transfer.

41-1027
Simulation of a multi-seam dragline operation in a sub-arctic mine.
Bandopadhyay, S., et al, *CIM bulletin*, Sep. 1986, 79(893), p.47-54, 22 refs.
Sundararajan, A.
Excavation, Permafrost, Mining, Coal, Thawing, Frozen ground strength, Thermal regime, Subpolar regions.

41-1028
Classification of seasonal snow cover crystals.
Colbeck, S.C., *Water resources research*, Aug. 1986, 22(9), MP 2164, p.59S-70S, 34 refs.
Snow crystal structure, Metamorphism (snow), Snow water content, Freeze thaw cycles, Classifications, Seasonal variations.
Snow cover crystals must be classified in a physically meaningful way. Previous classification systems are not sufficiently detailed or not based on sufficient knowledge of the physical processes. A new system is proposed based on our current knowledge of the physical processes of metamorphism. As more information about snow metamorphism is developed, the labels attached to snow grains should evolve too. Two levels of classification are proposed here. For practical purposes only a few terms like rounded and faceted are necessary, but for a more complete description a more detailed system is also given. The most basic description given in the table could be useful to many practitioners, while the more complete description given in the appendix will be necessary for many purposes.

41-1029
Nearfield noise measurements from an Arctic pressure ridge.
Buck, B.M., et al, *Acoustical Society of America Journal*, July 1986, 80(1), p.256-264, 17 refs.
Wilson, J.H.
Ice acoustics, Pressure ridges, Noise (sound), Ice formation.

41-1030
Concrete admixtures handbook; properties, science, and technology.
Ramachandran, V.S., ed, Park Ridge, NJ, Noyes Publications, 1984, 626p., Refs. passim. For selected papers see 41-1031 and 41-1032.
Concrete admixtures, Concrete freezing, Frost resistance, Antifreezes, Cement admixtures, Manuals, Frost action, Winter concreting, Corrosion, Freeze thaw cycles, Ice prevention.

41-1031
Cement science.
Ramachandran, V.S., et al, Concrete admixtures handbook, properties, science, and technology. Edited by V.S. Ramachandran, Park Ridge, NJ, Noyes Publications, 1984, p.1-53, 54 refs.
Feldman, R.F.
Cement admixtures, Frost action, Freeze thaw cycles, Frost resistance, Concrete durability, Concrete freezing, Air entrainment, Temperature effects, Salting.

41-1032
Antifreezing admixtures.
Ratinov, V.B., et al, Concrete admixtures handbook; properties, science, and technology. Edited by V.S. Ramachandran, Park Ridge, NJ, Noyes Publications, 1984, p.430-479, 30 refs.
Rozenberg, T.I.
Concrete admixtures, Antifreezes, Frost resistance, Winter concreting, Concrete durability, Concrete structures, Reinforced concretes, Ice prevention, Microstructure, Temperature effects.

41-1033
Arctic research in the national interest.
Washburn, A.L., et al, *Science*, Aug. 8, 1986, 233(4764), p.633-639, 73 refs.
Weller, G.
Natural resources, Military research, Transportation, Permafrost, Snow surveys, Ice surveys, Environmental protection, Research projects, United States—Alaska.

41-1034
Proceedings.
Northern Workshop, 1st, Edmonton, Alberta, Nov. 22-24, 1984, Edmonton, University of Alberta, Boreal Institute for Northern Studies, July 1986, 74p.
Mohsen, A.S.S., ed, MacKay, W.C., ed.
Engineering, Permafrost, Oceanography, Hydrology, Geology, Economic development.

41-1035
Determination of ice forces with centrifuge models.
Clough, H.F., et al, *Geotechnical testing journal*, June 1986, 9(2), p.49-60, 12 refs.
Wurst, P.L., Vinson, T.S.
Ice loads, Offshore structures, Ice pressure, Piles, Ice cover thickness, Temperature effects, Time factor, Models, Tests.

41-1036
Origin of kinks in polycrystalline ice.
Wilson, C.J.L., et al, *Tectonophysics*, July 1, 1986, 127(1/2), p.27-48, 17 refs.
Burg, J.P., Mitchell, J.C.
Ice crystal structure, Plastic deformation, Shear properties, Microstructure, Temperature effects.

41-1037
Snow cover data, winter 1984-85. Downsview, Ontario, Atmospheric Environment Service, 1985, 47p., In English and French.
Snow cover distribution, Snow depth, Snow water equivalent, Statistical analysis, Seasonal variations.

41-1038
Performance of soil-aggregate-fabric systems in frost-susceptible roads, Linn County, Iowa.
Hoover, J.M., et al, *Transportation research record*, 1981, No.827, p.6-14, 10 refs.
Pitt, J.M., Handfelt, L.D., Stanley, R.L.
Roads, Frost resistance, Subgrade soils, Ground thawing, Freeze thaw cycles, Soil stabilization, Tests.

41-1039
Short-wave radiation balance and heat flux in soil on the northern slopes of Central Caucasus. Alpine Meteorological Experiment (AL'PEX). [Korotkovolnovyĭ radiatsionnyĭ balans i potok tepla v pochve na severnykh sklonakh Tsentral'nogo Kavkaza. AL'-PEKS].
Kozhaev, D.A., et al, *Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1985, Vol.61, p.66-75, In Russian. 5 refs.
Kalov, Kh.M.
Solar radiation, Soil air interface, Slope orientation, Radiation balance, Heat transfer, Alpine landscapes, Snow physics, Albedo, Soil temperature.

41-1040
Photo-control tie of the SMP-32 to the MSU-S data and some reflection spectra characteristics of natural objects. [Metodika priviazki dannykh SMP-32 k izobrazheniiu poluchaemomu apparaturoĭ MSU-S i nekotorye kharakteristiki spektrov otrazheniia prirodnykh ob"ektov].
Dosov, V.N., et al, Distantsionnoe zondirovanie Zemli so sputnika "Meteor-Priroda"; Sovetsko-bolgarskiĭ eksperiment "Bolgariia-1300-II" (Remote sensing of the Earth from the "Meteor-Priroda" satellite: the Soviet-Bulgarian experiment Bolgariia-1300-II") edited by L.A. Pakhomov, Leningrad, Gidrometeoizdat, 1985, p.57-66, In Russian. 4 refs.
Markina, N.G., Pakhomova, L.A., Gusarova, Z.S.
Spaceborne photography, Measuring instruments, Data processing, Spectroscopy, Barents Sea.

41-1041
Transplantation methods for lichen indication. [Transplantatsionnye metody likhenoindikatsii].
Trass, Kh.Kh., Problemy ekologicheskogo monitoringa i modelirovaniia ekosistem (Problems of ecological monitoring and ecosystem modelling) Vol.8, edited by O.D. Reingeverts, Leningrad, Gidrometeoizdat, 1985, p.140-144, In Russian with English summary. 9 refs.
Lichens, Mosses, Introduced plants, Alpine landscapes, Snow cover effect, Polar regions.

41-1042
Errors in measuring ice thickness by airborne radar.
Bogorodskiĭ, V.V., et al, *Soviet physics—Technical physics*, June 1985, 55(6), p.660-662, Translated from Zhurnal tekhnicheskoĭ fiziki. 6 refs.
Oganesian, A.G.
Airborne radar, Ice cover thickness, Radar echoes, Accuracy.

41-1043
Seasonal changes of some environmental factors around the moss vegetation near Syowa Station, East Antarctica.
Kanda, H., *Tokyo. National Institute of Polar Research. Memoirs. Series E, Biology and medical science*, Sep. 1986, No.37, p.17-26, 11 refs.
Snowdrifts, Snow cover effect, Mosses, Antarctica—Showa Station, Antarctica—Ongul Island.
Seasonal changes around the moss vegetation, such as snow drift, water supply and temperature, were investigated in the vicinity of Showa Station from Feb. 1983 to Jan. 1984. After late Sep., the depth of snow cover gradually decreased and in Oct. the vegetation was partially exposed from snow. In early Dec. water traces were recognized beneath the snow. In contrast with a decay of the snow drift, the water content of moss turves increased and reached a maximum value of 125.8% during the period from late Dec. to early Jan. Each small moss colony composing the vegetation had its own pattern of water supply which was considered to be related with small streams from the drift. Moss growth is discussed. (Auth. mod.)

41-1044
Moisture in hygroscopic materials. [Vlaga gigroskopicheskikh materialov],
Efimov, S.S., Novosibirsk, Nauka, 1986, 160p., In Russian with English table of contents enclosed. 217 refs.
Porous materials, Capillarity, Hygroscopic water, Water structure, Ice structure, Phase transformations, Freezing points, Unfrozen water content, Experimentation.

41-1045
Physical properties and regimes of meadow-chernozem cryogenic soils of the Buryat SSR. [Fizicheskie svoistva i rezhimy lugovo-chernozemnykh merzlotnykh pochv Buriatii],
Kulikov, A.I., et al, Novosibirsk, Nauka, 1986, 137p., In Russian with English table of contents enclosed. Refs. p.130-136.
Panfilov, V.P., Dugarov, V.I.
Cryogenic soils, Permafrost depth, Meadow soils, Active layer, Permafrost hydrology, Chernozem.

41-1046
Problem of glacier mass balance and its significance for glaciology. [Problema balansa massy lednikov i ee znachenie dlia gliatsiologii],
Kotliakov, V.M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.4-8, 140-144, In Russian and English. 15 refs.
Glacier ice, Research projects, Ice volume, Mass balance.

41-1047
Computations of mass balance in glacier systems. [Raschet balansa massy lednikovykh sistem],
Diurgerov, M.B., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.8-15, 144-148, In Russian and English. 26 refs.
Ice volume, Glacier mass balance, Glacier oscillation, Glacier surveys.

41-1048
Meteorological conditions of glacier mass balance extremes. [Meteorologicheskie usloviia pri ekstremal'nykh znacheniiakh balansa massy lednikov],
Kuhn, M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.15-19, 149-153, In Russian and English. 4 refs.
Glacier mass balance, Meteorological factors, Statistical analysis.

41-1049
Glacier mass balance reconstructions for the Northern Hemisphere covering this century and their climatic significance. [Rekonstruktsii balansa massy lednikov severnogo polushariia v tekushchem stoletii i ikh klimaticheskoe znachenie],
Vallon, M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.20-25, 153-157, In Russian and English. 20 refs.
Letreguilly, A., Reynaud, L.
Glacier mass balance, Climatic changes, Meteorological factors.

41-1050
Recent fluctuations of mountain glaciers in the Northern Hemisphere. [Sovremennye kolebaniia gornykh lednikov severnogo polushariia],
Makarevich, K.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.25-33, 157-163, In Russian and English. 15 refs.
Rototaeva, O.V.
Ice surveys, Mountain glaciers, Glacier ice, Glacier oscillation, Alimentation, Ablation.

41-1051
Studying the sensitivity of mass-balance model including calculations of temperature profile inside the glacier. [Izuchenie chuvstvitel'nosti modeli balansa massy vkliuchaiushchei raschety temperaturnogo profilia vnutri lednika],
Gruell, W., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.34-38, 164-168, In Russian and English. 6 refs.
Oerlemans, J.
Mountain glaciers, Ice temperature, Glacier mass balance, Temperature distribution.

41-1052
Induced fluctuations of the Shumskiy glacier in Dzhungarskiy Alatau. [Vynuzhdennye kolebaniia lednika Shumskogo v Dzhungarskom Alatau],
Cherkasov, P.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.38-44, 168-173, In Russian and English. 12 refs.
Shumskii, P.A.
Mountain glaciers, Glacier oscillation, Glacier ice, Mass transfer.

41-1053
Calculating basic characteristics of mountain glaciers under climatic changes. [Raschet osnovnykh kharakteristik gornogo oledeneniia pri izmeneniiakh klimata],
Glazyrin, G.E., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.44-47, 173-175, In Russian and English. 5 refs.
Mountain glaciers, Climatic changes, Glacier oscillation.

41-1054
New method of using glaciers in monitoring climatic changes. [Novyi metod ispol'zovaniia lednikov dlia monitoringa izmenenii klimata],
Koerner, R.M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.47-52, 175-179, In Russian and English. 8 refs.
Mountain glaciers, Glacier surveys, Glacier mass balance, Climatic changes.

41-1055
Influence of large-scale atmospheric processes on the fluctuations of glaciers. [Vliianie krupnomasshtabnykh atmosfernykh protsessov na kolebaniia lednikov],
Denisova, T.IA., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.52-58, 179-185, In Russian and English. 14 refs.
Makarevich, K.G., Panova, E.N., Chichasov, G.N.
Climatic changes, Glacier oscillation, Glacier ice, Mountain glaciers, Statistical analysis.

41-1056
Role of evaporation from snow and ice in mass balance of glaciers. [Rol' isparenii s poverkhnosti snega i l'da v balanse massy lednika],
Kaser, G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.59-63, 185-188, In Russian and English. 13 refs.
Ice sublimation, Mountain glaciers, Snow evaporation, Glacier mass balance, Glacier surfaces, Evaporation, Meteorological factors.

41-1057
Influence of meteorological conditions on mass balance of glaciers of the Northern Patagonian ice field. [Meteorologicheskie usloviia i ikh vliianie na balans massy lednikov na Severnom Patagonskom ledianom plato],
Ohata, T., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.63-67, 188-191, In Russian and English. 10 refs.
Kobayashi, S., Nakajima, C.
Glacier mass balance, Glacier oscillation, Meteorological factors.

41-1058
New Zealand glaciers. [Ledniki Novoi Zelandii],
Fitzharris, B.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.84-89, 206-208, In Russian and English. 31 refs.
Chinn, T.J.
Climatic changes, Mountain glaciers, Glacier mass balance, Alimentation, Meteorological factors, Ablation, Melting, Glacial runoff.

41-1059
Fluctuations of Heard Island glaciers and related climatic changes. [Kolebaniia lednikov ostrova Heard i sootvetstvuiushchie izmeneniia klimata],
Allison, A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.89-95, 209-214, In Russian and English. 15 refs.
Keage, P.
Mountain glaciers, Climatic changes, Glacier oscillation, Meteorological factors.

41-1060
Glacier dynamics of the Altai-Sayan Mountain System for the last 150 years. [Dinamika lednikov Altae-Saianskoi gornoi sistemy za 150 let],
Reviakin, V.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.95-99, 214-216, In Russian and English. 4 refs.
Mukhametov, R.M.
Mountain glaciers, Glacier melting, Glacier oscillation, Meteorological factors, Human factors.

41-1061
Recent glacier oscillations in China. [Sovremennye kolebaniia lednikov Kitaia],
Zhang, X., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.99-105, 217-223, In Russian and English. 14 refs.
Glacier surveys, Aerial surveys, Photographic reconnaissance, Airborne equipment, Glacier oscillation.

41-1062
Study of glacier mass balance in China. [Izuchenie balansa massy lednikov Kitaia],
Xie, Z., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.105-110, 223-227, In Russian and English. 12 refs.
Zhang, J.
Mountain glaciers, Glacier mass balance, Glacier surveys, Snow depth, Firn.

41-1063
Glacier mass balance estimations from measurements made at the mean weighted altitude. [Otsenka balansa massy lednika po izmereniiam na srednei vzveshennoi vysote],
Valdeev, A.E., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.110-111, 229-229, In Russian and English. 4 refs.
Glacier mass balance, Alimentation, Mountain glaciers, Ablation, Glacier ice.

41-1064
Variations of mass balance components of valley glaciers in temperate latitudes of the USSR. [Izmenchivost' sostavliaiushchikh balansa massy dolinnykh lednikov umerennykh shirot v SSSR],
Menshutin, V.M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.112-116, 229-233, In Russian and English. 20 refs.
Mountain glaciers, Glacier mass balance, Valleys, Glacier surveys, Glacier ice.

41-1065
Combined ice and water balance investigations at the Vernagtferner glacier, Oetztal Alps. [Kompleksnye issledovaniia vodnogo balansa i balansa massy lednika Vernagtferner, v Etztal'skikh Al'pakh],
Reinwarth, O., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.116-120, 233-236, In Russian and English. 7 refs.
Mass balance, Water balance, Glacier surveys, Alpine glaciation, Route surveys, Aerial surveys.

41-1066
Spatial and temporal regularities of glacier fluctuations in the Eurasian Arctic. [Prostranstvennye i vremennye zakonomernosti izmenenii lednikov Evraziiskoi Arktiki],
Kislov, A.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.120-125, 236-241, In Russian and English. 12 refs.
Koriakin, V.S.
Ice conditions, Ice air interface, Ice water interface, Glacier oscillation, Spaceborne photography, Route surveys, Arctic Ocean.

41-1067
Accounting for the ice formation types in predicting glacier mass balance from given parameters of climatic forecasts. [Uchet tipov l'doobrazovaniia v prognozirovanii balansa massy lednikov po zadannym parametram klimaticheskogo prognoza],
Davidovich, N.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.125-131, 241-247, In Russian and English. 19 refs.
Glacier mass balance, Glacier ice, Ice formation, Meteorological data, Forecasting.

41-1068
Effect of mass balance changes on fluctuations of an ice sheet interacting with the sea. [Vliianie izmenenii balansa massy na kolebaniia lednikovogo pokrova vzaimodeistvuiushchego s morem],
Petrov, V.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.131-136, 247-250, In Russian and English. 5 refs.
Potapenko, V.IU., Chugunov, V.A.
Sea ice distribution, Glacier mass balance, Ice water interface, Heat transfer, Mathematical models, Mass transfer.

41-1069
Studying mass balance in the frontal zone of the Filchner-Ronne ice shelf, Antarctica. [Izuchenie balansa massy vo frontal'noi zone shel'fovogo lednika Fil'khnera-Ronne v Antarktide],
Kohnen, H., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, July 1986, Vol.57, p.136-139, 251-254, In Russian and English. 8 refs.
Lange, M.
Ice shelves, Ice volume, Ice edge, Antarctica.
Changes in position of the ice shelf front are analyzed for 1957-1984 and the shelf's mass balance is evaluated.

41-1070
Placers of cosmic dust in the blue ice lakes of Greenland.
Maurette, M., et al, *Science*, Aug. 22, 1986, 233(4766), p.869-872, 11 refs.
Cosmic dust, Ice sheets, Lake ice, Greenland.

41-1071
Antarctic climate research, No.1.
Scientific Committee on Antarctic Research. Group of Specialists on Antarctic Climate Research, Kingston, Tasmania, Australia, Sep. 1986, 31p., For selected papers see 41-1072 through 41-1077 or I-34671 through I-34676.
Weather stations, Climate, Antarctica.
This is the first issue of a Newsletter dedicated to publicizing and promoting research contributing to the study of the role of Antarctica in the global climate system. The theme for the issue is Automatic Weather Stations in Antarctica. Several nations report their activities, either on-going or anticipated in the future, with AWS programs at various places on the continent.

41-1072
United States Antarctic Research Program automatic weather station project.
Stearns, C.R., *Antarctic climate research*, Sep. 1986, No.1, p.5-12, 16 refs.
Weather stations, Research projects, Climate, Wind (meteorology), Heat transfer.
The scientific aims of the automatic surface weather station (AWS) project of the United States Antarctic Research Program (USARP) involve the efforts of several principal investigators in the United States. Presented here are the aims of the Department of Meteorology of the University of Wisconsin, Madison, Wisconsin. UW has been responsible for maintaining and deploying the USARP AWS units in Antarctica since July 1980. The scientific aims of the program are to investigate: Barrier winds along the east side of the Antarctic Peninsula and on the east side of the Transantarctic Mountains on the Ross Ice Shelf. The climatic record at Byrd Station, Dome C and Siple Station. Mesoscale circulation on the Ross Ice Shelf south of McMurdo, including the jet-effect wind. Föhn winds down Byrd and Beardmore Glaciers onto the Ross Ice Shelf. Sensible and latent heat fluxes, and atmospheric dynamics on the Ross Ice Shelf. Individual AWS units may provide data for several of the above items and all are useful to the Naval Support Force Antarctica (NSFA) McMurdo Weather Office in support of air operations. The arrangement, locations, and modes of operation of the AWS are described in diagram and text. (Auth. mod.)

41-1073
Boundary layer studies in Terra Nova Bay, Antarctica.
Bromwich, D.H., *Antarctic climate research*, Sep. 1986, No.1, p.13-16, 10 refs.
Wind velocity, Air water interactions, Ice air interface, Polynyas, Antarctica—Terra Nova Bay.
Each winter Terra Nova Bay is kept mostly free of sea ice by strong katabatic winds which continually blow down the Reeves Glacier from the East Antarctic plateau and cross the flat Nansen Ice Sheet. High wind speeds and low air temperatures lead to very high ice production rates in this recurring polynya; the ice is continually blown away by the wind, keeping the water and air in direct contact for continued ice formation. This region of intense air-sea interaction is an important oceanic heat sink and atmospheric heat source. Brine rejected during sea ice formation plays an important role in the oceanic circulation in the western Ross Sea. Quantitative *in situ* observations are being acquired to test these conjectures. The katabatic outflow is monitored by an automatic weather station (AWS) which is located on the southern part of Inexpressible Island at an elevation of 78 m. Specific topics being addressed are: documentation of the first order characteristics of the katabatic regime; evaluation of the interaction between the katabatic airstream and the regional atmospheric circulation, and testing the model for the forcing of the Terra Nova Bay polynya. (Auth. mod.)

41-1074
"IAGO-Katabatic" programme.
André, J.C., et al, *Antarctic climate research*, Sep. 1986, No.1, p.17-18, 6 refs.
Wendler, G., Zéphoris, M.
Wind velocity, Measuring instruments, Atmospheric circulation, Weather stations, Antarctica—Adélie Coast.
The IAGO (Interaction-Atmosphère-Glace-Océan) programme is aimed at obtaining a better description and understanding of katabatic winds to identify the elements of the phenomenon for inclusion in developing general circulation and climate models. A first and preliminary study (1976-83) was devoted to a detailed near-surface analysis of katabatic winds in a region of Adélie Land. The full-scale experimental study took place during a two-month period of the austral summer 1985-86. Simultaneous measurements of the vertical profiles of atmospheric parameters were made at three sites, distributed over 200 km inland from the coast to monitor the time evolution of the katabatic layer, as well as its stratification and its flow velocity. Different measurement techniques and instrumentation specially adapted and/or developed for this program are implemented in response to various meteorological conditions. (Auth. mod.)

41-1075
Japanese activities on automatic weather observations.
Fujii, Y., *Antarctic climate research*, Sep. 1986, No.1, p.19-20, 3 refs.
Weather stations, Telemetering equipment, Antarctica.
The Japanese experience with automatic weather stations in Antarctica is briefly recounted. The first stations were established in 1980 and in the 1984-85 summer two new systems, ARGOS and CMOS, were set up. Components of these systems are listed. A Japanese climate research program is expected to start in 1987.

41-1076
Use of automatic weather stations for surface observations on Bouvetöya.
Vinje, T., *Antarctic climate research*, Sep. 1986, No.1, p.21-22.
Weather stations, Telemetering equipment, Bouvet Island.
The Norwegian experience with automatic weather stations on Bouvet Island since 1977 is briefly recounted. Discussed are some of the unusual data applications; peculiarities of surface pressure readings under a NE wind regime; call signs of currently operating units; and the capabilities of the most recently installed equipment.

41-1077
ANARE automatic weather station program.
Allison, I., *Antarctic climate research*, Sep. 1986, No.1, p.25-30, 6 refs.
Weather stations, Telemetering equipment.
The report provides a review of the AWS employed by ANARE since 1971 with an emphasis on the period beginning with 1980. Characteristics and deployments of these units are described and displayed in chart form for three generations of AWS. Data processing and validation methods and results are discussed.

41-1078
Productivity of forest phytocenoses. [Produktivnost' lesnykh fitotsenozov],
Elagin, I.N., ed, Krasnoyarsk, 1984, 149p., In Russian. For selected papers see 41-1079 through 41-1083. Refs. passim.
Ecosystems, Cryogenic soils, Forest soils, Slope orientation, Permafrost depth, Paludification, Forest fires, Active layer, Climatic factors, Permafrost distribution, Plant ecology, Plant physiology.

41-1079
Influence of climatic factors on radial increment of trees and stands in the central Angara River region. [Vliianie klimaticheskikh faktorov na radial'nyi prirost derev'ev i drevostoev srednego Priangar'ia],
Dashkovskaia, I.S., et al, Produktivnost' lesnykh fitotsenozov (Productivity of forest phytocenoses) edited by I.N. Elagin, Krasnoyarsk, 1984, p.49-56, In Russian. 4 refs.
Matsuleva, G.N.
Forest soils, Permafrost depth, Active layer, Plant ecology, Plant physiology.

41-1080
Forest fire effect on the productiveness of stands. [Vliianie lesnykh pozharov na produktivnost' drevostoev],
Evdokimenko, M.D., Produktivnost' lesnykh fitotsenozov (Productivity of forest phytocenoses) edited by I.N. Elagin, Krasnoyarsk, 1984, p.56-65, In Russian. 4 refs.
Forest soils, Cryogenic soils, Forest fires, Forest canopy, Litter, Plant physiology.

41-1081
Differentiation in forest conditions of mountain regions and phytocenotic productivity. [Diskretnost' lesorastitel'nykh uslovii gornykh territorii i produktivnost' fitotsenozov],
Ziganshin, R.A., Produktivnost' lesnykh fitotsenozov (Productivity of forest phytocenoses) edited by I.N. Elagin, Krasnoyarsk, 1984, p.78-87, In Russian. 6 refs.
Alpine landscapes, Mountain soils, Cryogenic soils, Microclimatology, Slope orientation, Plant ecology, Plant physiology.

41-1082
Estimating the productivity of northern taiga forests in Siberia. [Otsenka produktivnosti severotaezhnykh lesov Sibiri],
Mitrofanov, D.P., Produktivnost' lesnykh fitotsenozov (Productivity of forest phytocenoses) edited by I.N. Elagin, Krasnoyarsk, 1984, p.95-102, In Russian. 10 refs.
Taiga, Plant ecology, Plant physiology, Forest lines, Continuous permafrost, Polar regions, Cryogenic soils.

41-1083
Influence of paludification and the combustibility of stands on their development and productivity. [Vliianie zabolochennosti i gorimosti drevostoev na ikh razvitie i produktivnost'],
Glebov, F.Z., et al, Produktivnost' lesnykh fitotsenozov (Productivity of forest phytocenoses) edited by I.N. Elagin, Krasnoyarsk, 1984, p.133-141, In Russian. 17 refs.
Kobiakov, M.V.
Forest fires, Plant ecology, Permafrost distribution, Permafrost depth, Age determination, Ecosystems, Paludification, Landscape types, Cryogenic soils.

41-1084
Flora of the Kanin Peninsula. [Flora poluostrova Kanin],
Sergienko, V.G., Leningrad, Nauka, 1986, 147p., In Russian with English table of contents enclosed. Refs. p.137-146.
Grazing, Plant ecology, Cryogenic soils, Ecosystems, Permafrost depth, Plant physiology, Tundra, Polar regions, Human factors, Continuous permafrost, Forest tundra, Agriculture.

41-1085
Increase in mineral N in soils during winter and loss of mineral N during early spring in north-central Alberta.
Malhi, S.S., et al, *Canadian journal of soil science*, Aug. 1986, 66(3), p.397-409, With French summary. 24 refs.
Nyborg, M.
Freeze thaw cycles, Ground thawing, Soil freezing, Soil chemistry, Minerals, Seasonal variations, Agriculture, Canada—Alberta.

41-1086
Unsteady flow simulation for an ice-covered river.
Yapa, P.D., et al, *Journal of hydraulic engineering*, Nov. 1986, 112(11), p.1037-1049, 17 refs.
Shen, H.T.
River flow, Ice conditions, River ice, Ice cover thickness, Ice water interface, Flow rate, Analysis (mathematics).

41-1087
[Proceedings].
International Offshore and Navigation Conference and Exhibition, Helsinki, Finland, Oct. 27-30, 1986. POLARTECH '86, VTT Symposium 70 and 71, Espoo, Valtion teknillinen tutkimuskeskus, 1986, 3 vols. + Suppls., Refs. passim. For selected papers see 41-1088 through 41-1151 and 41-2263 through 41-2284.
Offshore structures, Ice navigation, Offshore drilling, Ice loads, Ice physics, Remote sensing, Ice prevention, Ice removal, Meetings, Models.

41-1088
Ice engineering research activities on the Japanese coast of Okhotsk Sea.
Oshima, M., International Offshore and Navigation Conference and Exhibition, Helsinki, Oct. 27-30, 1986. POLARTECH '86. [Proceedings], VTT Symposium 70, Espoo, Valtion teknillinen tutkimuskeskus, 1986, p.15-29, 40 refs.
Ice mechanics, Ice conditions, Engineering, Offshore structures, Sea ice, Icebreakers, Research projects, Ice breaking, Okhotsk Sea.

41-1089
Swedish offshore industry and some Arctic developments.
Wassberg, R., International Offshore and Navigation Conference and Exhibition, Helsinki, Oct. 27-30, 1986. POLARTECH '86. [Proceedings], VTT Symposium 70, Espoo, Valtion teknillinen tutkimuskeskus, 1986, p.41-56.
Offshore structures, Ice loads, Icing, Natural resources, Pack ice, Sea ice, Icebergs, Countermeasures, Design, Sweden.

41-1090
Ice information systems for marine operations.
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41-1092
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The Ocean Drilling Program (ODP) is a long term program of scientific ocean drilling with the primary scientific objectives of studying the origin and evolution of the oceanic crust; the tectonic evolution of continental margins; the origin and evolution of marine sedimentary sequences; long term changes in the atmosphere, oceans, cryosphere, biosphere and magnetic field; and development of new tools and technology for deep ocean exploration and drilling. The drillship *Joides Resolution* was chosen by ODP because of its ice strengthened hull and ability to operate in polar areas. Experiences on cruises in the polar regions of the Labrador Sea/Baffin Bay and the Norwegian Sea are described together with plans for forthcoming cruises in the southern polar regions of the Weddell Sea in Antarctica. (Auth.)

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41-1097
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Ice pressure, Ice loads, Piles, Ships, Icebreakers, Analysis (mathematics).

41-1099
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41-1100
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41-1101
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41-1102
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41-1103
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41-1104
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41-1106
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41-1107
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41-1109
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41-1111
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41-1114
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41-1115
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41-1116
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41-1117
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41-1118
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41-1119
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41-1123
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41-1124
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41-1126
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41-1127
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41-1128
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41-1129
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41-1133
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41-1134
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41-1135
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41-1136
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41-1137
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41-1138
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41-1139
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41-1140
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41-1141
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41-1142
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41-1143
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41-1144
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41-1145
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41-1146
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41-1147
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Offshore structures, Floating ice, Ice shelves, Site surveys, Rheology, Ice creep, Natural resources, Ice mechanics, Antarctica—Dakshin Gangotri Station.
The coastal regions of Antarctica where substantial deposits of oil and other minerals are reported, consist of a number of ice shelves. Such areas encounter severe weather conditions and flow of the ice shelf which severely affect the life of the structure/installations. The Indian Antarctic station Dakshin Gangotri located in East Antarctica at 70 degree S 12 degree 05' E lies on one of such ice shelves. The paper brings out the criteria which should be kept in mind while selecting the site of a structure on an ice shelf and brings out a case study for selection of site of Indian research station Dakshin Gangotri in Dec. 1983 of which the author was the leader of the first wintering party. (Auth.)

41-1148
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Ice navigation, Velocity, Safety, Ice loads, Damage, Icebreakers, Ships, Analysis (mathematics), Ice conditions.

41-1149
BV 206—a vehicle for arctic transportation.
Ljunggren, J., International Offshore and Navigation Conference and Exhibition, Helsinki, Oct. 27-30, 1986. POLARTECH '86. [Proceedings], VTT Symposium 71, Espoo, Valtion teknillinen tutkimuskeskus, 1986, p.1127-1137.
Tracked vehicles, Diesel engines, Design, Maintenance.

41-1150
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Tanker ships, Ice breaking, Ice conditions, Sea ice, Models, Marine transportation, Velocity, Analysis (mathematics).

41-1151
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Westerberg, T.
Transportation, Structures, Marine transportation, Ice roads, Ice conditions, Frozen ground strength, Design, Vehicles, United States—Alaska—Prudhoe Bay.

41-1152
Fly ash, silica fume, slag, and natural pozzolans in concrete; Proceedings.
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DLC TP884.A3F589 1986
Concrete strength, Freeze thaw cycles, Concrete admixtures, Meetings, Mortars, Air entrainment, Frost resistance, Porosity.

41-1153
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Raverdy, M., Grimaldy, G.
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41-1154
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Frost resistance, Cement admixtures, Mortars, Porosity, Freeze thaw cycles, Sands.

41-1155
Mechanical properties, and freezing-and-thawing resistance of non-air-entrained and air-entrained condensed silica-fume concrete using ASTM test C 666, procedures A and B.
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DLC TP884.A3F589 1986
Concrete admixtures, Concrete strength, Freeze thaw cycles, Mechanical properties, Air entrainment, Tests.

41-1156
Strength and freezing-and-thawing resistance of concrete incorporating condensed silica fume.
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Concrete strength, Freeze thaw cycles, Concrete admixtures, Concrete durability, Mortars, Air entrainment, Frost resistance, Porosity, Compressive properties.

41-1157
Chloride ion penetration in conventional concrete and concrete containing condensed silica fume.
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DLC TP884.A3F589 1986
Concrete strength tions, Concrete admixtures, Penetration, Salting, So.utions, Tests.

41-1158
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International Association of Hydraulic Sciences. International Commission on Snow and Ice, Paris, UNESCO, 1981, 265p., In English, French, Spanish, Russian and German.
Avalanches, Snow surveys, Snow surface, Snow morphology, Snow stratigraphy, Photography, Classifications, Accidents, Rescue operations.

41-1159
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Ice lenses, Grain size, Frost heave, Frost action, Soil structure, Ground ice, Temperature effects.

41-1160
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Ice mechanics, Strains, Ice pressure, Ice deformation, Ice cover, Wind velocity, Ocean currents.

41-1161
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Wen, R.K., Andersland, B.
Frozen ground, Flexural strength, Soil creep, Loads (forces), Adhesion, Temperature effects, Sands.

41-1162
Internal stresses in frozen ground: Discussion.
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Williams, P.J., Wood, J.A.
Frozen ground physics, Frozen ground mechanics, Frost heave, Stresses, Ice lenses, Phase transformations, Thermodynamics, Soil water migration, Temperature gradients, Pressure.

41-1163
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Tectonics, Earth crust, Permafrost distribution, Vegetation, Planetary environments, Natural resources, Land ice, Ice loads, Fracture zones.

41-1164
Peculiarities of weathering and soil formation in forest tundra of the Northern Ob' Region. [Osobennosti vyvetrivaniia i pochvoobrazovaniia v lesotundre Severnogo Priob'ia],
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Zvereva, T.S.
Permafrost hydrology, Permafrost beneath rivers, Forest tundra, Soil formation, Plant ecology, Ecosystems, Mosses, Water chemistry, Lichens, Active layer, Soil profiles.

41-1165
Flora of overgrown gullies. [O flore zarastaiushchikh ovragov],
Shishkina, L.P., Zhizn' Zemli. Zemlevedenie i prirodnye resursy (The living Earth. Agriculture and natural resources) edited by S.A. Ushakov, Moscow, Universitet, 1986, p.67-70, In Russian. 4 refs.
Permafrost beneath rivers, Gullies, Permafrost hydrology, Revegetation, Plant ecology, Ecosystems, USSR—Taz River.

41-1166
Model of stresses in the Antarctic lithosphere induced by ice loads. [Model' napriazhenii v litosfere Antarktiki, vozmikaiushchikh pod deistviem ledovoi nagruzki],
Shemenda, A.I., et al, Zhizn' Zemli. Zemlevedenie i prirodnye resursy (The living Earth. Agriculture and natural resources) edited by S.A. Ushakov, Moscow, Universitet, 1986, p.97-102, In Russian. 14 refs.
Khrianina, L.P.
Land ice, Ice loads, Tectonics, Isostasy, Fracture zones, Mathematical models, Antarctica.
Radial troughs, located in the Antarctic marginal zone 250-300 km wide, are explained by the tensile stresses exerted by the antarctic ice sheet, and compared to similar ruptures developed in Greenland under similar conditions.

41-1167
Use of natural resources and environmental protection in the Timan-Pechora Regional Economic Complex. [Prirodopol'zovanie i okhrana okruzhaiushchei sredy Timano-Pechorskogo Territorial'no-Proizvodstvennogo Kompleksa],
Brattsev, A.P., ed, *Akademiia nauk SSSR. Komi filial. Trudy*, 1986, No.76, 119p., In Russian. For selected papers see 41-1168 through 41-1172. Refs. passim.
Landscape types, Icebound rivers, Tundra, Water supply, Pollution, Microclimatology, Paludification, Petroleum products, Drilling, Soil erosion, Subarctic regions, Economic development.

41-1168
Mesoclimatic characteristics of the Timan-Pechora Regional Economic Complex. [Mezoklimaticheskie osobennosti territorii Timano-Pechorskogo TPK],
Voevodova, Z.I., *Akademiia nauk SSSR. Komi filial. Trudy*, 1986, No.76, p.46-56, In Russian. 12 refs.
Microclimatology, Geomorphology, Subarctic regions, Economic development, Landscape types.

41-1169
Water supply conditions and waste-water dilution in the far northeast European USSR during periods of low water levels in rivers. [Usloviia vodosnabzheniia i razbavleniia stochnykh vod na Kraĭnem Severo-Vostoke evropeiskoĭ chasti strany v periody nizkoĭ vodnosti rek],
Kokovkin, A.V., *Akademiia nauk SSSR. Komi filial. Trudy*, 1986, No.76, p.57-67, In Russian. 18 refs.
Water supply, Waste disposal, Icebound rivers, Permafrost beneath rivers, Ground water, Water table, Seasonal variations.

41-1170
Pollution protection of water resources in the Timan-Pechora Task Economic Complex. [Problemy okhrany vodnykh resursov Timano-Pechorskogo TPK ot zagriazneniia],
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uma factors, Environmental protection, Water pollution, Icebound rivers, Water supply, River basins, Permafrost beneath rivers.

41-1171
Reaction of tundra vegetation to petroleum pollution induced by drilling. [Reaktsiia rastitel'nosti tundry na zagriaznenie nefteproduktami pri provedenii burovykh rabot],
Gnat, L.V., *Akademiia nauk SSSR. Komi filial. Trudy*, 1986, No.76, p.82-93, In Russian. 8 refs.
Drilling, Oil wells, Pollution, Tundra, Vegetation, Soil erosion, Microrelief.

41-1172
Bioindication of vegetation disturbance from drilling oil wells in the Bol'shezemel'skaya Tundra. [Vozmozhnost' bioindikatsii narushenii rastitel'nogo pokrova pri provedenii burovykh rabot na neftianykh mestorozhdeniiakh Bol'shezemel'skoĭ tundry],
Tentiukov, M.P., et al, *Akademiia nauk SSSR. Komi filial. Trudy*, 1986, No.76, p.94-103, In Russian. 18 refs.
Kuzivanova, S.V.
Drilling, Soil pollution, Oil wells, Plant physiology, Soil erosion, Tundra, Paludification, Cryogenic soils.

41-1173
Observations of seasonal changes in diatoms at inshore localities near Davis Station, East Antarctica.
Everitt, D.A., et al, *Hydrobiologia*, Aug. 12, 1986, 139(1), p.3-12, Refs. p.11-12.
Thomas, D.P.
Ice cover effect, Sea ice, Algae, Antarctica—Davis Station.
Seventy-five diatom taxa were identified from net plankton samples collected inshore during winter, spring and summer 1977-8 near Davis Station. Species richness was found to be higher in winter than in summer, this is the first time this trend has been reported in antarctic coastal regions. When these taxa were grouped according to the general habitats in which they normally occur, the benthic assemblages dominated the planktonic ones. Of the plankton, most species were of oceanic origin in winter and late summer and are thought to have been swept inshore by a cyclonic gyre which is known to occur in summer but has not been studied in winter. (Auth.)

41-1174
Latest Miocene benthic delta O-18 changes, global ice volume, sea level and the 'Messinian salinity crisis'.
Hodell, D.A., et al, *Nature*, Apr. 3-9, 1986, 320(6061), p.411-414, 35 refs.
Elmstrom, K.M., Kennett, J.P.
Sea level, Oxygen isotopes, Paleoclimatology, Ice volume.
Oxygen isotope evidence indicates high but variable delta O-18 values in benthic foraminiferal calcite during the latest Miocene and earliest Pliocene. These high values may represent increases in global ice volume and associated sea-level fall. The delta O-18 record resembles glacial/interglacial cycles, but with only one-third the amplitude of the late Pleistocene signal. This variability may reflect instability in the Antarctic ice sheet, and palaeomagnetic correlation points to an isotopic event coinciding with the isolation and desiccation of the Mediterranean basin during the latest Messinian. (Auth.)

41-1175
Effect of fertilizer on production and biomass of tussock tundra, Alaska, U.S.A.
Shaver, G.R., et al, *Arctic and alpine research*, Aug. 1986, 18(3), p.261-268, 27 refs.
Chapin, F.S., III.
Tundra, Hummocks, Biomass, Agriculture, Nutrient cycle, Plants (botany), United States—Alaska.

41-1176
Alpine tundra soil bacterial responses to increased soil loading rates of acid precipitation, nitrate, and sulfate, Front Range, Colorado, U.S.A.
Mancinelli, R.L., *Arctic and alpine research*, Aug. 1986, 18(3), p.269-275, 54 refs.
Alpine tundra, Soil microbiology, Soil chemistry, Bacteria, Environmental impact, United States—Colorado—Front Range.

41-1177
Direct measurement of lichen growth in the central Brooks Range, Alaska, U.S.A., and its application to lichenometric dating.
Haworth, L.A., et al, *Arctic and alpine research*, Aug. 1986, 18(3), p.289-296, 19 refs.
Calkin, P.E., Ellis, J.M.
Lichens, Growth, Age determination, Polar regions, United States—Alaska—Brooks Range.

41-1178
Glacier variations and their causes in the northern Patagonia icefield, Chile, since 1944.
Aniya, M., et al, *Arctic and alpine research*, Aug. 1986, 18(3), p.307-316, 37 refs.
Enomoto, H.
Glacier oscillation, Precipitation (meteorology), Air temperature, Climatic factors, Photography, Aerial surveys, Chile—Patagonia.

41-1179
Deglaciation of the mountainous region of northwestern Montana, U.S.A., as indicated by late Pleistocene ashes.
Carrara, P.E., et al, *Arctic and alpine research*, Aug. 1986, 18(3), p.317-325, 34 refs.
Short, S.K., Wilcox, R.E.
Glacier flow, Glacier melting, Ice cover, Glacier oscillation, Paleoclimatology, Volcanic ash, Mountains, Distribution, Stratigraphy, United States—Montana—Marias Pass.

41-1180
Textural and scanning electron microscope observations of some arctic-alpine soils developed in Weichselian and Neoglacial till deposits in southern Norway.
Mellor, A., *Arctic and alpine research*, Aug. 1986, 18(3), p.327-336, 46 refs.
Soil formation, Scanning electron microscopy, Sediments, Paleoclimatology, Particle size distribution, Weathering, Norway.

41-1181
Weathering pit development in the central Otago Mountains of southern New Zealand.
Fahey, B.D., *Arctic and alpine research*, Aug. 1986, 18(3), p.337-347, 28 refs.
Frost weathering, Periglacial processes, Pit and mound topography, Meltwater, Climatic factors, Mountains, Water chemistry, New Zealand—Otago Mountains.

41-1182
Arapaho rock glacier, Front Range, Colorado, U.S.A.: a 25-year resurvey.
Benedict, J.B., et al, *Arctic and alpine research*, Aug. 1986, 18(3), p.349-352, 8 refs.
Benedict, R.J., Sanville, D.
Rock glaciers, Glacier mass balance, Glacier flow, Glacial deposits, Velocity, United States—Colorado—Front Range.

41-1183
Response of permafrost terrain to disturbance: a synthesis of observations from northern Alaska, U.S.A.
Lawson, D.E., *Arctic and alpine research*, Feb. 1986, 18(1), MP 2165, p.1-7, 12 refs.
Permafrost preservation, Drilling, Environmental impact, Vegetation, Ground ice, Thermal regime, Ground thawing, Permafrost thermal properties, Revegetation, Thaw depth.
Former exploratory drilling sites in the National Petroleum Reserve Alaska, are examples of the long-term physical modifications resulting from disturbance of perennially frozen terrain. Camp construction and drilling activities in the late 1940s early 1950s resulted in disturbances which can be grouped by their first modification to the site and its thermal regime: trampling of vegetation, killing the vegetative cover, removal of the vegetative mat, or removal of the vegetation and soil. Removal of the vegetation led to the most extensive modifications at all sites, but the subsequent response to disturbance between sites varied with primarily four factors: (1) ground ice volume, (2) distribution and size of massive ground ice, (3) material properties during thaw, and (4) relief, including progressive changes during thaw subsidence. Variations in response time resulted from the influence of these factors on the type and activity of degradational processes that ensued. Physical stability is required for growth of vegetation and thermal equilibration, and has taken over 30 yr to attain in ice-rich, thaw-unstable areas. Ice-poor, thaw-stable materials in undrained or low relief areas required an estimated 5 to 10 yr for stability; thaw depth measurements suggest that certain of these areas have also equilibrated thermally.

41-1184
Detection of high altitude permafrost in Jotunheimen, Norway using seismic refraction techniques: an assessment.
Harris, C., et al, *Arctic and alpine research*, Feb. 1986, 18(1), p.19-26, 20 refs.
Cook, J.D.
Permafrost distribution, Active layer, Seismic refraction, Permafrost depth, Detection, Thaw depth, Measuring instruments, Altitude, Mountains.

41-1185
Physical basis of frost weathering: toward a more fundamental and unified perspective.
Walder, J.S., et al, *Arctic and alpine research*, Feb. 1986, 18(1), p.27-32, 26 refs.
Hallet, B.
Frost weathering, Frozen rocks, Freeze thaw cycles, Soil freezing, Construction materials, Thermodynamics, Porosity, Water content.

41-1186
Fine particle translocation in soils developed on glacial deposits, southern Baffin Island, N.W.T., Canada.
Locke, W.W., *Arctic and alpine research*, Feb. 1986, 18(1), p.33-43, 42 refs.
Soil formation, Glacial deposits, Particle size distribution, Periglacial processes, Mountains, Fines, Frost action.

41-1187
Distribution and character of sediments in a tidewater glacier, southern Baffin Island, N.W.T., Canada.
Dowdeswell, J.A., *Arctic and alpine research*, Feb. 1986, 18(1), p.45-56, 42 refs.
Glacial deposits, Sediments, Particle size distribution, Tides, Glacier flow, Grain size, Meltwater, Canada—Northwest Territories—Baffin Island.

41-1188
Pollen, vegetation, and climate relationships along the Dalton Highway, Alaska, U.S.A.: a basis for Holocene paleoecological and paleoclimatic studies.
Short, S.K., et al, *Arctic and alpine research*, Feb. 1986, 18(1), p.57-72, 59 refs.
Andrews, J.T., Webber, P.J.
Climatic factors, Vegetation, Pollen, Mosses, Tundra, Paleoclimatology, Palynology, Paleobotany, Meteorological data, United States—Alaska—Dalton Highway.

41-1189
Mass balance and sliding velocity of the Puget lobe of the Cordilleran ice sheet during the last glaciation.
Booth, D.B., *Quaternary research*, May 1986, 25(3), p.269-280, 44 refs.
Glacier flow, Glacier mass balance, Basal sliding, Meltwater, Paleoclimatology, Velocity, Glacier ablation, Pleistocene, United States—Washington—Puget Lowland.

41-1190
Lateral-moraine stratigraphy and neoglacial history of Bugaboo Glacier, British Columbia.
Osborn, G., *Quaternary research*, Sep. 1986, 26(2), p.171-178, 21 refs.
Glacial deposits, Glacier oscillation, Moraines, Alpine glaciation, Stratigraphy, Paleoclimatology, Gullies, Canada—British Columbia—Bugaboo Glacier.

41-1191
Use of lacustrine sedimentary sequences as indicators of Holocene glacial history, Banff National Park, Alberta, Canada.
Leonard, E.M., *Quaternary research*, Sep. 1986, 26(2), p.218-231, 26 refs.
Glacial deposits, Lacustrine deposits, Sediments, Climatic factors, Drill core analysis, Age determination, Paleoclimatology, Mountains, Canada—Alberta—Banff National Park.

41-1192
Steel plates for offshore structures used in icy seas.
Hattori, K., et al, *Nippon steel technical report*, Dec. 1984, No.24, p.35-52, 12 refs.
Offshore structures, Steels, Plates, Cold weather operation, Ice loads, Welding, Temperature effects, Engineering.

41-1193
Study on the improvement of weld properties for ultra-heavy steel plate (HT-50) for offshore structures in frigid regions.
Homma, H., et al, *Nippon steel technical report*, Dec. 1984, No.24, p.53-59, 6 refs.
Ohkita, S., Wakabayashi, M., Mori, N.
Welding, Offshore structures, Steels, Plates, Ice loads, Cold weather operation, Ice conditions, Temperature effects, Microstructure, Stresses.

41-1194
Forecast techniques for ice accretion on different types of marine structures, including ships, platforms and coastal facilities.
Jessup, R.G., May 1985, 90p., Unpublished manuscript. Draft version presented to the 9th session of the WMO Commission for Marine Meteorology, Oct. 1984. 55 refs.
Ice accretion, Offshore structures, Icing, Ship icing, Thermodynamics, Ice models, Computer applications.

41-1195
Methods of numerical mapping of zones of intensive convection, clear-air turbulence, and icing. [Metodika rascheta karty zon intensivnoĭ konvektsii turbulentnosti v iasnom nebe i obledeneniia],
Abramovich, K.G., et al, *Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1985, Vol.260, p.3-15, In Russian. 25 refs.
Aircraft icing, Ice formation, Meteorological data, Meteorological charts.

41-1196
Using image recognition in classifying conditions of icing. [Opyt klassifikatsii uslovii obledeneniia metodom raspoznavaniia obrazov],
Gorlach, I.A., *Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1985, Vol.260, p.62-71, In Russian. 21 refs.
Aircraft icing, Ice formation, Ice cover thickness, Ice accretion, Meteorological data, Analysis (mathematics).

41-1197
Methods of geomorphological field experiments in the USSR. [Metody polevykh geomorfologicheskikh eksperimentov v SSSR],
Dedkov, A.P., ed, Moscow, Nauka, 1986, 160p., In Russian. For selected papers see 41-1198 through 41-1202. Refs. passim.
Timofeev, D.A., ed.
Photogrammetry, Slope processes, Hydrothermal processes, Geocryology, Frost weathering, Soil creep, Solifluction, Thermokarst, Surveys, Research projects, Measuring instruments.

41-1198
Slow hydrothermal movements of soil and ground masses on slopes (creep). [Medlennye gidrotermicheskie dvizheniia pochvenno-gruntovykh mass na sklonakh (krip)],
Dedkov, A.P., et al, Metody polevykh geomorfologicheskikh eksperimentov v SSSR (Methods of geomorphological field experiments in the USSR) edited by A.P. Dedkov and D.A. Timofeev, Moscow, Nauka, 1986, p.77-90, In Russian. 28 refs.
Mozzherin, V.I.
Soil creep, Slope processes, Hydrothermal processes, Geocryology, Solifluction, Soil mechanics.

41-1199
Methods of studying cryogenic relief-forming processes at research stations. [Metodika statsionarnykh issledovanii kriogennykh rel'efoobrazuiushchikh protsessov],
Zhigarev, L.A., et al, Metody polevykh geomorfologicheskikh eksperimentov v SSSR (Methods of geomorphological field experiments in the USSR) edited by A.P. Dedkov and D.A. Timofeev, Moscow, Nauka, 1986, p.111-119, In Russian. Refs. p.118-119.
Sukhodrevskiĭ, V.I.
Geocryology, Frost weathering, Freeze thaw cycles, Thermokarst, Frost shattering, Polygonal topography, Ground ice, Ice veins, Ice wedges.

41-1200
Methods of studying cryogenic slope processes at research stations. [Metodika statsionarnykh issledovanii kriogennykh sklonovykh protsessov],
Zhigarev, L.A., et al, Metody polevykh geomorfologicheskikh eksperimentov v SSSR (Methods of geomorphological field experiments in the USSR) edited by A.P. Dedkov and D.A. Timofeev, Moscow, Nauka, 1986, p.120-129, In Russian. 15 refs.
Sukhodrovskiĭ, V.L.
Bench marks, Slope processes, Solifluction, Permafrost depth, Flow rate, Measuring instruments.

41-1201
Methods of studying rock streams by repeated phototheodolite surveys. [Metodika statsionarnykh issledovanii kurumov povtornymi fototeodolitnymi s"emkami],
Shevchenko, B.F., Metody polevykh geomorfologicheskikh eksperimentov v SSSR (Methods of geomorphological field experiments in the USSR) edited by A.P. Dedkov and D.A. Timofeev, Moscow, Nauka, 1986, p.130-134, In Russian. 8 refs.
Rock streams, Photogrammetry, Surveys, Flow rate, Measuring instruments, Slope orientation.

41-1202
Results obtained in studying recent exogenic processes at the research stations of the Institute of Geography of Siberia and the Far East, Siberian Branch of the Academy of Sciences, USSR. [Osnovnye rezul'taty izucheniia sovremennykh ekzogennykh protsessov na statsionarakh Instituta Geografii Sibiri i Dal'nego Vostoka SO AN SSSR],
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Titova, Z.A.
Taiga, Geocryology, Solifluction, Frost weathering, Thermokarst, Soil erosion, Slope processes, Creep, Forest soils, Research projects, Slope orientation, Snow cover effect, Experimentation.

41-1203
Role of transportation in the development of northern regions with limited access. [Rol' transporta v osvoenii trudnodostupnykh raionov Severa],
Derbyshev, A.S., *Problemy Severa*, 1986, Vol.22, p.60-63, In Russian. 3 refs.
Roads, Transportation, All terrain vehicles, Air cushion vehicles, Rivers, Subarctic landscapes, Economic development.

41-1204
Complex approach to a transportation system for newly developed areas of the northern Tyumen' region. [Kompleksnyĭ podkhod k formirovaniiu transportnoĭ sistemy v raionakh novogo osvoeniia tiumenskogo Severa],
Vasiliuk, V.A., *Problemy Severa*, 1986, Vol.22, p.74-79, In Russian. 4 refs.
Petroleum products, Drilling, Pipelines, Residential buildings, Industrial buildings, Roads, Permafrost beneath structures.

41-1205
Basic problems of power supply in the North. [Osnovnye problemy energosnabzheniia raionov Severa],
Ryl'skiĭ, V.A., et al, *Problemy Severa*, 1986, Vol.22, p.86-93, In Russian. 3 refs.
Antonenko, G.V.
Electric power, Industrial buildings, Residential buildings, Hydraulic structures, Pipelines, Permafrost beneath structures, Cost analysis.

41-1206
Theoretical basis for planning northern cities. [Teoreticheskie osnovy formirovanna severnykh gorodov].
Panov, L.K., *Problemy Severa*, 1986, Vol.22, p.146-154, In Russian.
Urban planning, Buildings, Roads, Pavements, Concrete structures, Permafrost beneath structures.

41-1207
Peculiarities of determining economic effectiveness of technical equipment in the North. [Metodicheskie osobennosti opredeleniia ekonomicheskoi effektivnosti primeneniia tekhniki na Severe].
Dashkova, T.E., *Problemy Severa*, 1986, Vol.22, p.188-192, In Russian. 2 refs.
Construction equipment, Construction materials, Transportation, Tractors, Earthwork, Frost resistance, Cost analysis.

41-1208
Final report on freezeup studies, RU 205.
U.S. Geological Survey, 1986, var.p., Refs. passim
For individual reports see 41-1209 through 41-1211.
Bottom ice, Slush, Frazil ice, Sediment transport, Freezeup, Ice growth, Ice formation, Beaufort Sea.

41-1209
Anchor ice and bottom-freezing in high-latitude marine sedimentary environments: observations from the Alaskan Beaufort Sea.
Reimnitz, E., et al, *U.S. Geological Survey. Open-file report*, 1986, No.86-298, 21p., Refs. p.18-21
Kempema, E.W., Barnes, P.W.
Bottom ice, Ice growth, Sediment transport, Freezing, Underwater ice, Beaufort Sea.

41-1210
Flume studies and field observations of the interaction of frazil ice and anchor ice with sediment.
Kempema, E.W., et al, *U.S. Geological Survey. Open-file report*, 1986, No.86-515, 48p., Refs. p.45-48.
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Frazil ice, Bottom ice, Sediment transport, Ice formation, Hydraulic structures, Water temperature, Supercooling, Salinity, Channels (waterways), Beaufort Sea.

41-1211
Field observations on slush ice generated during freezeup in Arctic coastal waters.
Reimnitz, E., et al, *U.S. Geological Survey. Open-file report*, 1986, 19p., 23 refs.
Kempema, E.W.
Slush, Ice formation, Sediment transport, Freezeup, Ice conditions, Ice navigation, Ice pressure, Geologic processes, Beaufort Sea.

41-1212
Viscoelastic response of floating ice plates under distributed or concentrated loads.
Hui, D., *Journal of strain analysis for engineering design*, July 1986, 21(3), p.135-143, 35 refs.
Floating ice, Viscoelasticity, Loads (forces), Plates, Ice deformation, Stresses, Ice elasticity, Ice creep, Analysis (mathematics), Ice conditions.

41-1213
Effect of the extent of freezing on seismic velocity in unconsolidated permafrost.
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King, M.S.
Permafrost physics, Seismic velocity, Freezing, Ground ice, Porosity, Compressive properties, Models, Time factor, Mapping.

41-1214
Fluctuations of glaciers 1975-1980, Vol.IV.
Haeberli, W., comp, Paris, UNESCO, 1985, 265p. + maps, Refs. passim.
Glacier oscillation, Glacier mass balance, Glacier thickness, Mountain glaciers, Aerial surveys, Statistical analysis.
Data on glacier variations reported from different parts of the world are compiled, tabulated, mapped and discussed. Those for 32 antarctic and sub-antarctic glaciers were submitted by J. Chinn of New Zealand and I. Allison of Australia. The glaciers are listed and show the glacier number, name, PSFG identifying number, latitude and longitude, classification, exposition of accumulation and ablation areas, maximum, median, and minimum elevation, total area in sq km, length from maximum to minimum elevation, and type of data. A variation table gives number, name, PSFG number, dates of first and last survey, and variations in the horizontal position of the glacier front expressed as the change in length between survey covering the years 1976, 1977, 1978, 1979, and 1980. The maps show glaciers in Norway, Switzerland, Austria, Germany, China, and Afghanistan.

41-1215
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Snow melting, Pack ice, Albedo, Brightness, Arctic Ocean.

41-1216
Short-time [illegible]sting of snowfall by lidar.
Shimizu, H., et al, *Applied optics*, July 1, 1986, 25(13), p.2109-2114, 19 refs.
Snowfall, Remote sensing, Radar echoes, Forecasting, Backscattering, Wind velocity.

41-1217
Vane shear strength of snow (2)—Effects of the shape and the size of vane on the vane shear strength of snow.
Kuriyama, H., et al, *Seppyo*, Sep. 1986, 48(3), p.133-140, In Japanese with English summary. 5 refs.
Ito, H.
Snow strength, Shear strength, Velocity, Tests.

41-1218
Design of a system of snow removing gutters and the amount of water required for the snow removal.
Watanabe, Z., *Seppyo*, Sep. 1986, 48(3), p.141-148, In Japanese with English summary. 15 refs.
Snow removal, Water flow, Drains, Design.

41-1219
Storage of vegetables by the use of snow.
Muramatsu, K., *Seppyo*, Sep. 1986, 48(3), p.149-157, In Japanese with English summary. 18 refs.
Cold storage, Preserving, Snow cover effect, Snow temperature, Humidity, Seasonal variations, Climatic factors.

41-1220
Ten questions and eight answers for problems of snow and ice.
Kojima, K., *Seppyo*, Sep. 1986, 48(3), p.159-167, In Japanese. 19 refs.
Snow surveys, Ice surveys, Evaporation, Condensation, Ice physics, Snow physics, Temperature effects, Seasonal variations.

41-1221
On the powder snow avalanche which occurred in Shimamichi-kohsen, Nou-machi, Niigata Prefecture, 1986.
Izumi, K., et al, *Seppyo*, Sep. 1986, 48(3), p.168-170, In Japanese. 4 refs.
Kobayashi, S.
Avalanche deposits, Avalanche formation, Snow mechanics, Snow density. Japan—Niigata Prefecture.

41-1222
Hypersaline gradients in two canadian High Arctic lakes.
Stewart, K.M., et al, *Canadian journal of fisheries and aquatic sciences*, Sep. 1986, 43(9), p.1795-1803, With French summary. 59 refs.
Platford, R.F.
Lake water, Permafrost, Water chemistry, Salinity, Tundra, Temperature gradients, Lake ice, Canada—Northwest Territories—Sophia Lake, Canada—Northwest Territories—Garrow Lake.

41-1223
Arctic drilling/production unit anchored by tendons.
Stewart, W.P., *Ocean industry*, Mar. 1986, 21(3), p.26-28.
Offshore structures, Offshore drilling, Soil strength, Ocean bottom, Sea ice, Anchors, Engineering, Design.

41-1224
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Nickling, W.G., et al, *Arctic and alpine research*, May 1985, 17(2), p.125-134, 21 refs.
Brazel, A.J.
Wind direction, Ice cover effect, Wind velocity, Surface properties, Valleys, Weather observations, Diurnal variations, Canada—Yukon Territory—Icefield Ranges.

41-1225
Late Quaternary moraines in the Chimborazo area, Ecuador.
Clapperton, C.M., et al, *Arctic and alpine research*, May 1985, 17(2), p.135-142, 12 refs.
McEwan, C.
Quaternary deposits, Glacial deposits, Mountain glaciers, Paleontology, Moraines, Models, Valleys, Ecuador—Chimborazo.

41-1226
Particle size and clay mineral distributions within sorted and nonsorted circles and the surrounding parent material, Niwot Ridge, Front Range, Colorado, U.S.A.
Rissing, J.M., et al, *Arctic and alpine research*, May 1985, 17(2), p.153-163, 28 refs.
Thorn, C.E.
Alpine tundra, Patterned ground, Particle size distribution, Frost heave, Clay soils, Vegetation, Environmental impact, Mountains, United States—Colorado—Niwot Ridge.

41-1227
Statistical interpretation of the fabric of a rock glacier.
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Vitek, J.D.
Rock glaciers, Glacial deposits, Glacier flow, Geomorphology, Moraines, United States—Colorado—Mount Mestas.

41-1228
Stratifying alpine tundra for geomorphic studies using digitized aerial imagery.
Frank, T.D., et al, *Arctic and alpine research*, May 1985, 17(2), p.179-187, 30 refs.
Thorn, C.E.
Alpine tundra, Geomorphology, Vegetation, Remote sensing, Topographic effects, Aerial surveys, Classifications, Mapping, United States—Colorado—Front Range.

41-1229
Aboveground:belowground phytomass ratios in Venezuelan paramo vegetation and their significance.
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Klinger, L.F.
Vegetation, Plant physiology, Cold tolerance, Models, Mountains, Grazing, Temperature effects, Venezuela—Andes.

41-1230
Plant diversity in relation to plant production and disturbance by voles in Alaskan tundra communities.
Fox, J.F., *Arctic and alpine research*, May 1985, 17(2), p.199-204, 29 refs.
Tundra, Vegetation, Snow cover effect, Soil composition, Alpine tundra, Plant productivity, United States—Alaska—Fairbanks.

41-1231
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Fahey, B.D., et al, [illegible] *alpine research*, Aug. 1984, 16(3), p.291-298, 24 refs.
Dagesse, D.F.
Freeze thaw cycles, Rock mechanics, Frost shattering, Humidity, Temperature effects, Periglacial processes, Grain size.

41-1232
Tree-ring analysis of movement of a rock-glacier complex on Mount Mestas, Colorado, U.S.A.
Giardino, J.R., et al, *Arctic and alpine research*, Aug. 1984, 16(3), p.299-309, 24 refs.
Shroder, J.F., Jr., Lawson, M.P.
Rock glaciers, Glacier oscillation, Glacier flow, Statistical analysis, Talus, Age determination, United States—Colorado—Mount Mestas.

41-1233
Late Quaternary chronology for the Watts Bay area, Frobisher Bay, southern Baffin Island, N.W.T., Canada.
Dowdeswell, J.A., *Arctic and alpine research*, Aug. 1984, 16(3), p.311-320, 26 refs.
Glacial deposits, Moraines, Glaciation, Pleistocene, Age determination, Lichens, Cirque glaciers, Climatic changes, Canada—Northwest Territories—Baffin Island.

41-1234
Influence of water table and atmospheric CO2 concentration on the carbon balance of arctic tundra.
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Billings, W.D., Reynolds, D.N.
Tundra, Water table, Carbon dioxide, Soil microbiology, Vegetation, Growth, Degradation, Peat, Ecosystems, Soil chemistry.

41-1235
Phytoedaphic relationships in alpine tundra of north-central Colorado, U.S.A.
Eddleman, L.E., et al, *Arctic and alpine research*, Aug. 1984, 16(3), p.343-359, 31 refs.
Ward, R.T.
Tundra, Soil microbiology, Vegetation, Snow cover effect, Snow accumulation, Soil temperature, Soil erosion, United States—Colorado—Front Range.

41-1236
Growth forms and ecology of *Nothofagus solandri* at the alpine timberline, Craigieburn Range, New Zealand.
Norton, D.A., et al, *Arctic and alpine research*, Aug. 1984, 16(3), p.361-370, 32 refs.
Schönenberger, W.
Vegetation, Growth, Trees (plants), Plant ecology, Forest lines, Mountains, New Zealand—Craigieburn Range.

41-1237
Transformation of an ice clathrate and hexagonal ice on compression at 77 K.
Johari, G.P., et al, *Philosophical magazine B*, Oct. 1986, 54(4), p.311-315, 10 refs.
Jones, S.J.
Ice crystal structure, Low temperature tests, Latticed structures, Phase transformations, Dielectric properties, Ice melting, Compressive properties, Clathrates.

41-1238
Pingo ice of the western Arctic coast, Canada.
Mackay, J.R., *Canadian journal of earth sciences*, Oct. 1985, 22(10), p.1452-1464, With French summary. 25 refs.
Pingos, Ground ice, Permafrost physics, Ice structure, Water pressure, Subpermafrost ground water, Canada.

41-1239
Southeastward ice flow in central Quebec and its paleogeographic significance.
Bouchard, M.A., et al, *Canadian journal of earth sciences*, Oct. 1985, 22(10), p.1536-1541, With French summary. 25 refs.
Martineau, G.
Glacier flow, Glacial erosion, Ice mechanics, Paleoclimatology.

41-1240
Evidence for a Neoglacial advance of the Boundary Glacier, Banff National Park, Alberta.
Gardner, J.S., et al, *Canadian journal of earth sciences*, Nov. 1985, 22(11), p.1753-1755, With French summary. 10 refs.
Jones, N.K.
Glacier oscillation, Glacier flow, Radioactive age determination, Paleoclimatology, Mountain glaciers, Canada—Alberta—Banff National Park.

41-1241
Use of an ablatometer to measure short-term ablation of exposed ground ice.
Lewkowicz, A.G., *Canadian journal of earth sciences*, Dec. 1985, 22(12), p.1767-1773, With French summary. 24 refs.
Ground ice, Ablation, Permafrost thermal properties, Thermokarst development, Measuring instruments, Ice melting, Diurnal variations, Canada—Northwest Territories—Banks Island.

41-1242
Glacial dispersal train of Paleozoic erratics, central Baffin Island, N.W.T., Canada.
Tippett, C.R., *Canadian journal of earth sciences*, Dec. 1985, 22(12), p.1818-1826, With French summary. 22 refs.
Glacial deposits, Glacial erosion, Glacier flow, Glacial geology, Paleoclimatology, Pleistocene, Ice sheets, Aerial surveys, Canada—Northwest Territories—Baffin Island.

41-1243
Note on the glacial geology and postglacial emergence of the Lake Harbour region, Baffin Island, N.W.T.
Clark, P., *Canadian journal of earth sciences*, Dec. 1985, 22(12), p.1864-1871, With French summary. 36 refs.
Glacial geology, Glacier flow, Glaciation, Ice mechanics, Glacial erosion, Paleoclimatology, Radioactive age determination, Canada—Northwest Territories—Baffin Island.

41-1244
Experimental ecology of *Dryas octopetala* ecotypes. 3. Environmental factors and plant growth.
McGraw, J.B., *Arctic and alpine research*, Aug. 1985, 17(3), p.229-239, 24 refs.
Alpine tundra, Plant ecology, Cold tolerance, Growth, Snow cover effect, Vegetation, Environments, United States—Alaska—Eagle Summit.

41-1245
Growth forms, carbon allocation, and reproductive patterns of High Arctic saxifrages.
Grulke, N.E., et al, *Arctic and alpine research*, Aug. 1985, 17(3), p.241-250, 40 refs.
Bliss, L.C.
Plants (botany), Nutrient cycle, Cold tolerance, Growth, Vegetation, Plant physiology, Canada—Northwest Territories—Arctic Archipelago.

41-1246
Floristic analysis of the distribution of ephemeral plants in treeline areas of the western United States.
Jackson, L.E., *Arctic and alpine research*, Aug. 1985, 17(3), p.251-260, 50 refs.
Cold tolerance, Climatic factors, Forest lines, Vegetation, Mountains, Classifications.

41-1247
Turf-banked terraces in the Olympic Mountains, Washington, U.S.A.
Hansen-Bristow, K.J., et al, *Arctic and alpine research*, Aug. 1985, 17(3), p.261-270, 31 refs.
Price, L.W.
Vegetation, Cold tolerance, Periglacial processes, Mountains, Climatic factors, Seasonal freeze thaw, Landforms, Frost action.

41-1248
Dendrochronological and palynological observations on *Populus balsamifera* in northern Alaska, U.S.A.
Edwards, M.E., et al, *Arctic and alpine research*, Aug. 1985, 17(3), p.271-277, 25 refs.
Dunwiddie, P.W.
Forest ecosystems, Cold tolerance, Plant physiology, Pollen, Mosses, Age determination, Palynology, United States—Alaska—North Slope.

41-1249
Contemporary pollen deposition and the distribution of *Betula glandulosa* at the limit of low arctic tundra in southern Baffin Island, N.W.T., Canada.
Jacobs, J.D., et al, *Arctic and alpine research*, Aug. 1985, 17(3), p.279-287, 36 refs.
Mode, W.N., Dowdeswell, E.K.
Tundra, Lichens, Pollen, Cold tolerance, Vegetation, Paleobotany, Canada—Northwest Territories—Baffin Island.

41-1250
Glaciation level in West Greenland.
Humlum, O., *Arctic and alpine research*, Aug. 1985, 17(3), p.311-319, 30 refs.
Glaciation, Glacier mass balance, Ice cover, Climatic factors, Distribution, Altitude, Seasonal variations, Greenland.

41-1251
Pingos of the Prudhoe Bay region, Alaska.
Walker, D.A., et al, *Arctic and alpine research*, Aug. 1985, 17(3), p.321-336, 31 refs.
Walker, M.D., Everett, K.R., Webber, P.J.
Pingos, Ground ice, Geomorphology, Distribution, Landscapes, Frost mounds, Freeze thaw cycles, United States—Alaska—Prudhoe Bay.

41-1252
Rock moisture content and frost weathering under natural and experimental conditions: a comparative discussion.
McGreevy, J.P., et al, *Arctic and alpine research*, Aug. 1985, 17(3), p.337-346, 43 refs.
Whalley, W.B.
Frost weathering, Freeze thaw cycles, Rocks, Water content, Bricks, Saturation.

41-1253
Mean stresses in the upper layer of the Hans Glacier, Spitsbergen, and their relation to the glacier's seismicity.
Cichowicz, A., *Acta geophysica polonica*, 1986, 34(1), p.13-19, With Polish summary. 13 refs.
Glacier surveys, Stresses, Seismology, Icequakes, Ice cracks, Ice physics, Norway—Spitsbergen.

41-1254
Changing climate: geothermal evidence from permafrost in the Alaskan Arctic.
Lachenbruch, A.H., et al, *Science*, Nov. 7, 1986, 234(4777), p.689-696, 21 refs.
Marschall, B.V.
Permafrost thermal properties, Permafrost heat transfer, Climatic changes, Geothermy, Temperature distribution, Conduction, United States—Alaska.

41-1255
Particle size and shape variation on alpine debris fans, Canadian Rocky Mountains.
Sauchyn, D.J., *Physical geography*, July-Sep. 1986, 7(3), p.191-217, Refs. p.215-217.
Rock mechanics, Slope processes, Talus, Geomorphology, Mountains, Particle size distribution, Canada—Rocky Mountains.

41-1256
Vascular plants of mountain talus slopes, Mt. Rae area, Alberta, Canada.
Kershaw, L.J., et al, *Physical geography*, July-Sep. 1986, 7(3), p.218-230, 27 refs.
Gardner, J.S.
Plants (botany), Talus, Slope stability, Vegetation, Mountains, Canada—Rocky Mountains.

41-1257
Floristic patterns on avalanche paths in the northern Rocky Mountains, USA.
Manalson, G.P., et al, *Physical geography*, July-Sep. 1986, 7(3), p.231-238, Refs. p.236-238.
Butler, D.R.
Vegetation, Avalanche tracks, Plants (botany), Mountains, Plant ecology, United States—Rocky Mountains.

41-1258
Device for monitoring soil movement in peatlands.
Nelson, F.E., *Physical geography*, July-Sep. 1986, 7(3), p.275-281, 26 refs.
Soil mechanics, Frost heave, Freeze thaw cycles, Peat, Landforms, Measuring instruments, Monitors.

41-1259
Atmospheric methane sources: Alaskan tundra bogs, an alpine fen, and a subarctic boreal marsh.
Sebacher, D.I., et al, *Tellus*, Feb. 1986, 38B(1), p.1-10, 39 refs.
Atmospheric composition, Tundra, Natural gas, Swamps.

41-1260
Deposition of atmospheric trace metals in northern Sweden as measured in the snowpack.
Ross, H.B., et al, *Tellus*, Feb. 1986, 38B(1), p.27-43, 31 refs.
Granat, L.
Atmospheric composition, Metals, Snow cover, Snow impurities, Sweden.

41-1261
Rheology of ice II and ice III from high-pressure extrusion.
Echelmeyer, K., et al, *Geophysical research letters*, July 1986, 13(7), p.693-696, 15 refs.
Kamb, B.
High pressure ice, Rheology, Ice deformation.

41-1262
Rigid frame model of porous media for the acoustic impedance of snow.
Buser, O., *Journal of sound and vibration*, Nov. 1986, 111(1), p.71-92, 15 refs.
Snow acoustics, Snow physics, Snow cover structure, Models.

41-1263
Theory for the scalar roughness and the scalar transfer coefficients over snow and sea ice.
Andreas, E.L., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1986, CR 86-09, 19p., ADA-174 089, Refs. p.17-19.
Snow surface, Sea ice, Heat transfer, Moisture transfer, Surface roughness, Turbulent flow, Models, Wind velocity, Latent heat.
The bulk aerodynamic transfer coefficients for sensible, C(H) and latent, C(E), heat over snow and sea ice surfaces are necessary for accurately modeling the surface energy budget but are very difficult to measure. This report therefore presents a theory that predicts C(H) and C(E) as functions of the wind speed and a surface roughness parameter. The crux of the model is establishing the interfacial sublayer profiles of the scalars, temperature and water vapor, over aerodynamically smooth and rough surfaces. These interfacial sublayer profiles are derived from a surface-renewal model in which turbulent eddies continually sweep down to the surface, transfer scalar contaminants across the interface by molecular diffusion, and then burst away. Matching the interfacial sublayer profiles with the usual semilogarithmic inertial sublayer profiles yields the roughness lengths for temperature and water vapor. With these and a model for the drag coefficient over snow and sea ice based on

actual measurements, the transfer coefficients are predicted C(E) is always a few percent larger than C(H). Both decrease monotonically with increasing wind speed for speeds above 1 m/s, and both increase at all wind speeds as the surface gets rougher.

41-1264

Pliocene variations in the position of the Antarctic Convergence in the southwest Atlantic.

Ciesielski, P.F., et al, *Paleoceanography*, June 1986, 1(2), p.197-232, Refs. p.228-232.

Grinstead, G.P.

Sea level, Paleoecology, Paleoclimatology, Ice growth, Glaciation, Sea ice.

Middle to late Pliocene (4.1-1.9 Ma) variations in the positions of surface water masses and migrations of the Polar Front in the southwest Atlantic are inferred from a factor analysis of radiolarian assemblages from DSDP site 514. Faunal results suggest that surface water masses underwent progressive cooling as the Polar Front Zone (PFZ) advanced northward during the latest Gilbert to late Gauss chron. This movement northward of cooler surface waters is inferred to be related to the initial growth of sea ice and ice shelves throughout regions of West Antarctica which were deglaciated or unglaciated during the prior warming interval of the Gilbert chron. It is suggested that the permanent change from subantarctic to antarctic surface water mass dominance was linked indirectly to the initial growth of Northern Hemisphere ice and a reduction of sea level. (Auth. mod.)

41-1265

Twenty-fourth Soviet Antarctic Expedition. General description of studies of the 1978/79 season, with research results. [Dvadtsat' chetvertaia sovetskaia antarkticheskaia ekspeditsiia. Sezonnye issledovaniia 1978/79g. Obshchee opisanie i nauchnye rezul'taty],

Sovetskaia antarkticheskaia ekspeditsiia, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.78, 139p., In Russian. Refs. passim. For individual papers see 41-1266 through 41-1270 or B-34720, F-34716, 34718-34719, G-34717, and J-34715.

Korotkevich, E.S., ed.

Expeditions, Traverses.

This report on the 1978-79 Soviet Antarctic Expedition provides, in pt. 1, three chapters which cover organization and conduct of the expedition, ship observations, and a summary of research and other activities at Soviet stations and by teams on traverse operations, respectively. Pt. 2 consists of 6 individual papers giving the scientific results of various projects.

41-1266

Brine in sea ice and its effect on sea ice heat conductivity. [O vliianii rassola v morskom l'du na ego teploprovodnost'],

Nazintsev, IU.L., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.78, p.107-115, In Russian. 6 refs.

Brines, Ice composition, Thermal conductivity, Ice thermal properties, Sea ice.

Studies of thermal conductivity of sea ice at different temperatures and salinities, carried out during 1979/80 antarctic cruises of the ship *Mikhail Somov*, are discussed. Instruments and methods used are described, and results are presented in tables.

41-1267

Unloading of a large tanker near Mirnyy Station. [Opyt organizatsii razgruzki krupnotonnazhnogo tankera v raĭone Mirnogo],

Kozlovskiĭ, A.M., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.78, p.116-119, In Russian.

Sedov, O.K.

Cargo, Sea ice, Fast ice, Fuel tansport, Tanker ships, Antarctica—Lena Passage, Antarctica—Mirnyy Station.

Dimensions are given and maneuvers and fuel unloading operations are described of the ship *Mikhail Somov* and the tanker *BAM* in the Lena Passage, between Apr. 21 and 24, 1979. It is reported that the operations were successful in spite of the ice thickness ranging between 20 and 40 cm and a 25 m/h wind. At 150 m off the coast, the ice thickness decreased to 10 cm.

41-1268

Young sea ice as a platform for cargo unloading in Antarctica. [Ispol'zovanie molodogo l'da dlia razgruzki sudov v Antarktide],

Nazintsev, IU.L., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.78, p.120-126, In Russian. 4 refs.

Sedov, O.K.

Fast ice, Ice deformation, Ice cover strength, Young ice, Cargo, Sea ice, Ice models, Bearing strength, Antarctica—Mirnyy Station.

It is reported that in summer of 1978/79 the ice shelf conditions near Mirnyy Station did not permit the unloading of cargo, carried by the Soviet ship *Mikhail Somov*, on the shore. Instead, ice floats 20-30 cm thick and 150-200 m long were found on Mar. 27 and used, for nine working days, as platforms to transfer from ship to helicopter 350 tons of cargo, which was then transported to Mirnyy Station by air. Physical and mechanical properties of the young ice employed were studied, and methods and results are discussed.

41-1269

Measurements of glacier thickness and flow velocity along the traverse Mirnyy-Komsomolskaya-Dome B. [Izmerenie tolshchiny i skorosti dvizheniia lednikovogo pokrova v raĭone marshruta Mirnyĭ-Komsomol'skaia-Kupol "B"],

Sheremet'ev, A.N., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.78, p.127-132, In Russian. 3 refs.

Ice models, Rheology, Ice cover thickness, Radio echo soundings, Glacier flow, Antarctica—East Antarctica.

Mathematical procedures are discussed which make it possible to calculate the thickness of the ice sheet, the rheological properties of ice, temperature and velocities in the glacier body, mass balance and configurations of the bed. The results are compared with data obtained during a traverse from Mirnyy Station to Dome B. The ice flow data, calculated and measured by radio echo soundings, confirm the reliability of the calculation technique.

41-1270

Preliminary results of microbiological investigations at Mirnyy. [Predvaritel'nye rezul'taty mikrobiologicheskikh issledovaniĭ v Mirnom],

Abyzov, S.S., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.78, p.133-136, In Russian. 1 ref.

Rusanov, V.P., Smagin, V.M.

Soil pollution, Soil microbiology, Snow impurities, Human factors, Antarctica—Mirnyy Station.

A program of environmental protection from pollution, carried out at Mirnyy Station, is described. Microbiological analyses of soil and snow samples, collected in the vicinity of the station, uncovered various stages of contamination caused by man.

41-1271

Periodic phase transformations in liquids. [Periodicheskie fazovye prevrashcheniia v zhidkostiakh],

Akulichev, V.A., et al, Moscow, Nauka, 1986, 280p., In Russian with abridged English table of contents enclosed. 190 refs.

Alekseev, V.N., Bulanov, V.A.

Liquids, Supercooling, Phase transformations, Ice crystal nuclei.

41-1272

Time-dependent settlement behavior of foundations in antarctic snow, firn, and ice at Georg von Neumayer and Filchner Stations. [Zeitabhängiges Setzungsverhalten von Gründungen in Schnee, Firn und Eis der Antarktis am Beispiel der deutschen Georg-von-Neumayer- und Filchner-Station],

Dörr, R., *Ruhr-Universität Bochum. Institut für Grundbau, Wasserwesen, und Verkehrswesen. Schriftenreihe. Serie Grundbau*, May 1984, No.7, 124p., In German with English and French summaries. 50 refs.

Snow deformation, Viscoelastic materials, Settlement (structural), Foundations, Snow mechanics, Antarctica—Filchner Station, Antarctica—Georg von Neumayer Station.

Deformations of snow, firn or ice caused by external loads are time dependent because of the viscoelastic material behavior. Therefore settlement of structures must be expected during their lifetimes if the foundations influence these materials. This time-dependent settlement of shallow foundations at the two German antarctic research stations is measured and compared with calculations. The calculations use the compactive viscosity derived from the *in situ* depth-density curve to express the time-dependent deformation behavior. (Auth.)

41-1273

Physical methods of studying material used in railroad technology. [Fizicheskie metody issledovaniia materialov primeniaemykh v tekhnike zheleznodorozhnogo transporta],

Vereshchagin, I.K., ed, *Trudy institutov inzhenerov zheleznodorozhnogo transporta*, 1982, Vol.701, 135p., In Russian. For selected papers see 41-1274 and 41-1275. Refs. passim.

Railroads, Permafrost structure, Ice physics, Construction materials, Icing, Frozen ground strength, Measuring instruments, Countermeasures, Permafrost beneath structures.

41-1274

Ice adhesion to structural materials and covers and multi-component anti-icing systems. [Adgeziia l'da k konstruktsionnym materialam i pokrytiiam i kombinirovannye protivoobledenitel'nye sistemy],

Kozlovskaia, R.T., et al, *Trudy institutov inzhenerov zheleznodorozhnogo transporta*, 1982, Vol.701, p.96-101, In Russian. 10 refs.

Paniushkin, A.V., Sergacheva, N.A.

Construction materials, Icing, Glaze, Power line icing, Ice adhesion, Countermeasures.

41-1275

Electrical impulse method of determining the strength of frozen ground and ice. [Opredelenie prochnosti merzlogo grunta i l'da elektroimpul'snym metodom],

Kytin, IU.A., *Trudy institutov inzhenerov zheleznodorozhnogo transporta*, 1982, Vol.701, p.108-113, In Russian. 3 refs.

Ice physics, Static loads, Dynamic loads, Frozen ground strength, Permafrost structure, Electromagnetic properties, Measuring instruments.

41-1276

Examples of dam construction in Siberia and the Far North. [Primery stroitel'stva plotin v usloviiakh Sibiri i Kraĭnego Severa],

Kolmogorov, R.I., *Leningrad. Institut vodnogo transporta. Trudy*, 1973, Vol.146, p.53-62, In Russian.

DLC HE675.L38

Snowfall, Rock fills, Hydraulic structures, Dams, Permafrost beneath structures, Earth dams, Earth fills, Cold weather construction.

41-1277

Mean long-range ice balance of Lake Baykal during the ice breakup period. [Srednii mnogoletnii balans l'da ozera Baĭkal v period razrusheniia ledianogo pokrova],

Moskalets, V.F., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Sbornik rabot po gidrologii*, 1982, No.17, p.180-187, In Russian. 3 refs.

Ice breakup, Icebound lakes, Ice volume, Drift, Heat balance, Ice conditions, Water balance.

41-1278

Weddell Fan and associated abyssal plain, Antarctica: morphology, sediment processes, and factors influencing sediment supply.

Anderson, J.B., et al, *Geo-marine letters*, 1986, 6(3), p.121-129, 27 refs.

Wright, R., Andrews, B.

Mapping, Ice shelves, Marine geology, Glacial geology, Antarctica—Weddell Sea.

The newly discovered Weddell Fan covers 0.75 m. sq km. The adjacent continental shelf is characterized by deep, rugged topography; the inner shelf is covered by a grounded polar ice sheet. The upper fan has numerous deep, V-shaped canyons that intersect a slope-base, leveed fan valley. Piston cores from the valley contain disorganized gravel grading upward into graded gravel and sand. Levee cores contain interbedded hemipelagic sediments and fine-grained turbidites. The lower fan is sand-rich. Sediment supply to the fan apparently occurred before development of glacial shelf topography and during a more temperate glacial setting. (Auth.)

41-1279

New data on the relief development of the South Shetland Islands, Antarctica.

Barsch, D., et al, *Interdisciplinary science reviews*, June 1986, 11(2), p.211-218, Refs. p.217-218.

Mäusbacher, R.

Ice cover, Paleoclimatology, Glacial erosion, Glacial deposits, Antarctica—South Shetland Islands, Antarctica—Antarctic Peninsula.

Planation surfaces on the Antarctic Peninsula and the neighboring islands seem to be fairly old. The prominent marine erosion surface on Fildes Peninsula, 35-45 m above mean sea level, is probably older than 85,000 years —older than the last interglacial period and the penultimate glaciation. All Holocene beaches, which are situated between 20 m and the present coastline, were formed during the last 6000 years. Before 6000 BP the islands were still completely glaciated. The breakdown of the ice cover to nearly the present extent must have been extremely abrupt, taking no more than 1000 years (6000 to 5000 BP). Between 3000 and 1000 BP there were at least two readvances. These advances were restricted to the prominent outlet glaciers, which followed pre-existing valleys. (Auth. mod.)

41-1280

Influence of sea ice and sea ice biota on downwelling irradiance and spectral composition of light in McMurdo Sound.

Sullivan, C.W., et al, *SPIE—The International Society for Optical Engineering. Proceedings*, 1984, Vol.489, Ocean optics 7. Edited by M.A. Blizard, p.159-165, 15 refs.

Palmisano, A.C., SooHoo, J.B.

Sea ice, Plankton, Photosynthesis, Ice cover effect, Snow cover effect, Light transmission, Microbiology, Algae, Antarctica—McMurdo Sound.

A dense population of microalgae grows in the lower layers of annual sea ice in McMurdo Sound. The attenuation of light by surface snow, congelation and platelet sea ice, and ice microalgae was measured using an underwater spectroradiometer with a cosine collector. The *in vivo* absorption spectrum derived from *in situ* light measurements was comparable to the *in vivo* absorption spectrum measured in the laboratory. Microalgae demonstrated an absorption peak at about 675 nm and a broad peak between 450 and 550 nm. Absorption of light by ice microalgae affects not only the total photosynthetically active

radiation (PAR) but also the spectral composition of radiation available to under-ice phytoplankton. Thus biological as well as physical properties of sea ice determine the under-ice light field in polar oceans. (Auth.)

41-1281
Numerical two-dimensional study of thermal behaviour around a cylindrical cooled underground cavity. Domain of validity of an axisymmetrical scheme.
Cames-Pintaux, A.M., et al, *Cold regions science and technology*, Apr. 1986, 12(2), p.105-114, 30 refs.
Nguyen-Lamba, M., Aguirre-Puente, J.
Underground storage, Cryogenic structures, Frozen ground thermodynamics, Heat transfer, Stefan problem, Phase transformations, Enthalpy, Storage tanks, Analysis (mathematics).

41-1282
Motion resistance of avalanches on smooth paths.
Glenne, B., *Cold regions science and technology*, Apr. 1986, 12(2), p.115-119, 29 refs.
Avalanche mechanics, Avalanche tracks, Snow mechanics, Soil mechanics, Friction, Mathematical models, Velocity, Dynamic properties, Rock mechanics.

41-1283
Snow deflector built at the edge of a road cut.
Anno, Y., *Cold regions science and technology*, Apr. 1986, 12(2), p.121-129, 7 refs.
Snowdrifts, Snow fences, Snow accumulation, Road maintenance, Countermeasures, Blowing snow, Trafficability, Models.

41-1284
Numerical evaluation of flexible footing settlement into uniform snowcover.
Dandekar, B.W., et al, *Cold regions science and technology*, Apr. 1986, 12(2), p.131-138, 12 refs.
Brown, R.L.
Snow cover, Snow deformation, Loads (forces), Snow density, Analysis (mathematics), Settlement (structural), Stresses, Snow physics.

41-1285
New method of measuring the snow-surface temperature.
Andreas, E.L., *Cold regions science and technology*, Apr. 1986, 12(2), MP 2166, p.139-156, 23 refs.
Snow temperature, Surface temperature, Snow cover, Meteorological factors, Hygrometers, Dew point, Water vapor, Saturation, Vapor transfer, Latent heat, Measuring instruments.
Because a snow cover is so tenuous, measuring its surface temperature is not easy. The surface is ill-defined and easily disturbed, invasive transducers commonly used for other surfaces are, thus, generally inappropriate for snow. We therefore describe a hygrometric method of measuring the snow-surface temperature. The advantages are that the method is non-invasive, that its accuracy depends only weakly on the surface structure, and that it is reliable even in bright sunlight. The key assumption is that the air at a snow surface is in saturation with the snow, the dew-point temperature of air right at the snow surface is thus the surface temperature. Consequently, under a fairly wide range of conditions we can, in effect, measure the surface temperature by measuring the dew-point temperature 10 cm above the surface. We develop a theoretical justification for the hygrometric measurement, discuss the meteorological parameters that affect the accuracy of the method, and compare hygrometer data with more traditional measurements.

41-1286
Ice loads on offshore structures: the transition from creep to fracture.
Sanderson, T.J.O., et al, *Cold regions science and technology*, Apr. 1986, 12(2), p.157-161, 10 refs.
Child, A.J.
Ice loads, Offshore structures, Ice conditions, Ice cracks, Ice creep, Ice mechanics, Stresses, Velocity.

41-1287
Added mass and damping coefficient for certain 'realistic' iceberg models.
Bass, D.W., et al, *Cold regions science and technology*, Apr. 1986, 12(2), p.163-174, 21 refs.
Sen, D.
Icebergs, Ice models, Drift, Ice solid interface, Hydrodynamics, Flow rate.

41-1288
EG/AD/S: a new type of model ice for refrigerated towing tanks.
Timco, G.W., *Cold regions science and technology*, Apr. 1986, 12(2), p.175-195, Refs. p.193-195.
Ice models, Doped ice, Ice mechanics, Flexural strength, Ice elasticity, Ice growth, Impurities, Ice crystal structure, Compressive properties.

41-1289
Alignment of crystals in sea ice due to fluid motion.
Langhorne, P.J., et al, *Cold regions science and technology*, Apr. 1986, 12(2), p.197-214, 41 refs.
Robinson, W.H.
Ice crystal structure, Sea ice, Ice growth, Water flow, Ice water interface, Velocity, Fluid dynamics.

41-1290
Snowdrifting: a review of modelling methods.
Kind, R.J., *Cold regions science and technology*, June 1986, 12(3), p.217-228, 45 refs.
Snowdrifts, Snow mechanics, Blowing snow, Wind factors, Snowfall, Models.

41-1291
Model tests on ice-rubble size and ship resistance in ice rubble.
Ettema, R., et al, *Cold regions science and technology*, June 1986, 12(3), p.229-243, 10 refs.
Matsuishi, M., Katazawa, T.
Ice navigation, Icebreakers, Ice loads, Ice cover thickness, Models, Velocity, Tests, Ice solid interface, Ice mechanics.

41-1292
Centrifuge model experiments to determine ice forces on vertical cylindrical structures.
Clough, H.F., et al, *Cold regions science and technology*, June 1986, 12(3), p.245-259, 31 refs.
Vinson, T.S.
Ice loads, Offshore structures, Ice cracks, Compressive properties, Ice cover thickness, Ice crystal size, Ice cover strength, Tests, Models.

41-1293
Borehole deformation experiments, Barnes Ice Cap, Canada.
Hooke, R.L., et al, *Cold regions science and technology*, June 1986, 12(3), p.261-276, 36 refs.
Hanson, B.
Glacier flow, Boreholes, Rheology, Shear strain, Shear stress, Deformation, Ice density, Velocity.

41-1294
Scale effect in ice.
Gershunov, E.M., *Cold regions science and technology*, June 1986, 12(3), p.277-284, 22 refs.
Ice cracks, Ice structure, Brittleness, Ice loads, Offshore structures, Compressive properties, Temperature effects, Ice pressure, Mathematical models.

41-1295
***In situ* measurements of the resistivity of antarctic sea ice.**
Buckley, R.G., et al, *Cold regions science and technology*, June 1986, 12(3), p.285-290, 18 refs.
Staines, M.P., Robinson, W.H.
Ice strength, Sea ice, Ice salinity, Ice temperature, Ice structure, Snow cover effect, Electrical conductivity, Antarctica—McMurdo Sound.
The resistivity of first year sea ice was measured *in situ* at two locations in McMurdo Sound, Antarctica using the Wenner array technique at audio frequencies. In addition, salinity and temperature profiles were measured. The results are adequately described by a three-layer model made up of a thin conducting surface layer, an insulating layer and finally sea water. The average resistivity of sea ice was found to lie in the range 50-200 ohm depending on salinity, structure and temperature. The resistivity and thicknesses of the surface layer could not be determined uniquely by the model but a maximum value for the resistivity as low as 4 ohm m was obtained. The resistivity of the surface layer was found to be influenced by the removal of the snow cover. The depth predicted by the Wenner sounding was found to be roughly 50% of the actual depth, a result that is consistent with a conductivity in the vertical direction and parallel to the brine channels of four times the conductivity in the horizontal direction within the bulk layer.

41-1296
Conversion of a low-speed wind tunnel to a snowdrift wind tunnel.
Anno, Y., et al, *Cold regions science and technology*, June 1986, 12(3), p.291-294, 8 refs.
Hoshiba, S., Aihara, H.
Snowdrifts, Wind tunnels, Models.

41-1297
Determination of the liquid water content of snow by the dye dilution technique.
Grenfell, T.C., *Cold regions science and technology*, June 1986, 12(3), p.295-298, 8 refs.
Snow water content, Unfrozen water content, Remote sensing, Snow hydrology, Metamorphism (snow), Microwaves, Temperature effects, Temperature measurement.

41-1298
Measurements of the linear thermal expansion coefficients of asphalt pavement at low temperatures.
Osterkamp, T.E., et al, *Cold regions science and technology*, June 1986, 12(3), p.299-301, 6 refs.
Baker, G.C.
Bitumens, Thermal expansion, Pavements, Freeze thaw cycles, Cold weather tests, Cracking (fracturing), Measuring instruments.

41-1299
Proposal of a constitutive equation of temperate firn.
Ambach, W., et al, *Cold regions science and technology*, Oct. 1986, 13(1), p.1-9, 7 refs.
Eisner, H.
Firn, Ice deformation, Compressive properties, Ice creep, Flow rate, Ice formation, Phase transformations, Shear strain, Stresses, Anaylsis (mathematics), Boreholes.

41-1300
Outline of avalanches in China.
Wang, Y., et al, *Cold regions science and technology*, Oct. 1986, 13(1), p.11-18, 18 refs.
Huang, M.
Avalanche formation, Damage, Precipitation (meteorology), Mountains, Countermeasures, Seasonal variations, Distribution, China.

41-1301
Test of the avalanche runout equations developed by the Norwegian Geotechnical Institute.
Martinelli, M., Jr., *Cold regions science and technology*, Oct. 1986, 13(1), p.19-33, 5 refs.
Avalanche formation, Avalanche deposits, Avalanche tracks, Tests, Forecasting, Analysis (mathematics), Statistical analysis.

41-1302
Multi-basin avalanche simulation: a model.
Judson, A., et al, *Cold regions science and technology*, Oct. 1986, 13(1), p.35-47, 24 refs.
King, R.M., Brink, G.E.
Avalanche formation, Snow mechanics, Snow loads, Snow cover stability, Models, Forecasting, Mountains, Meteorological factors.

41-1303
Iceberg stability—an error analysis.
Bass, D.W., et al, *Cold regions science and technology*, Oct. 1986, 13(1), p.49-55, 6 refs.
Attwood, D.R.
Iceberg towing, Stability, Offshore structures, Protection, Accuracy, Drift.

41-1304
Research needs for physical modelling in ice engineering: reflections from a university ice tank.
Ettema, R., *Cold regions science and technology*, Oct. 1986, 13(1), p.57-65, 37 refs.
Ice models, Materials, Design, Ice solid interface, Ice navigation, Ice loads, Engineering, Ships, Research projects.

41-1305
Mechanical properties of atmospheric ice.
Druez, J., et al, *Cold regions science and technology*, Oct. 1986, 13(1), p.67-74, 14 refs.
Nguyen, D.D., Lavoie, Y.
Icing, Ice mechanics, Wind tunnels, Cloud droplets, Ice formation, Supercooling, Compressive properties, Ice adhesion, Meteorological factors, Ice strength, Unfrozen water content.

41-1306
Yield and failure envelope for ice under multiaxial compressive stresses.
Nadreau, J.P., et al, *Cold regions science and technology*, Oct. 1986, 13(1), p.75-82, 16 refs.
Michel, B.
Ice strength, Loads (forces), Compressive properties, Ice crystal structure, Pressure, Tests, Models, Stresses.

41-1307
Glacier mass balances in the Cajon del Rubio, Andes Centrales Argentinos.
Leiva, J.C., et al, *Cold regions science and technology*, Oct. 1986, 13(1), p.83-90, 8 refs.
Cabrera, G., Lenzano, L.E.
Glacier mass balance, Photogrammetry, Glacial deposits, Glacier alimentation, Glacier ablation, Mountains, Statistical analysis, Argentina—Andes.

41-1308
Aspects of ice lens growth in soils.
Penner, E., *Cold regions science and technology*, Oct. 1986, 13(1), p.91-100, 14 refs.
Ice lenses, Ground ice, Ice growth, Temperature effects, Frost heave, Experimentation.

41-1309
Laboratory creep tests of frozen gravels.
Huang, S.L., et al, *Cold regions science and technology*, Oct. 1986, 13(1), p.101-104.
Speck, R.C.
Frozen ground mechanics, Soil creep, Gravel, Strains, Tests, Particle size distribution, Sands.

41-1310
Studies of frozen ground excavation equipment. [Issledovanie mashin dlia razrabotki merzlykh gruntov], IArkin, A.A., ed. Moscow, 1978, 87p., In Russian. For individual papers see 41-1311 through 41-1326. Refs. passim.
Earthwork, Construction equipment, Frozen ground, Design, Excavation, Cold weather performance.

41-1311
Physico-mathematical model of caterpillar tractors equipped with scarifier attachments. [Fiziko-matematicheskaia model' gusenichnogo traktora s rykhlitel'nym oborudovaniem],
Gaitsgori, M.M., et al, Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.3-7, In Russian. 2 refs.
Zakharchuk, B.Z., Selivanov, A.S.
Earthwork, Tracked vehicles, Frozen ground.

41-1312
Calculating metallic structures of excavation equipment. [K raschetu metallokonstruktsii rykhlitel'nogo oborudovaniia],
Selivanov, A.S., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.8-14, In Russian. 1 ref.
Earthwork, Construction equipment, Excavation, Steels, Design, Frozen ground strength.

41-1313
Determining the parameters of ripper-tooth extensions. [Opredelenie parametrov ushiritelei zuba rykhliteliia],
Sukhov, I.I., et al, Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.14-20, In Russian. 3 refs.
Shloido, G.A.
Earthwork, Construction equipment, Design, Excavation, Frozen ground strength.

41-1314
Probability analysis of variations in the resistance of frozen ground to ripping. [Veroiatnostnyi analiz kharaktera izmeneniia soprotivleniia rykhleniiu merzlogo grunta],
Shloido, G.A., et al, Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.20-25, In Russian. 3 refs.
Sukhov, I.I.
Frozen ground strength, Earthwork, Excavation, Equipment.

41-1315
Plotting a theoretical diagram of loads on cutting tools. [Postroenie teoreticheskoi diagrammy nagruzheniia rezhushchego instrumenta],
Zakharov, V.A., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.25-30, In Russian. 3 refs.
Loads (forces), Frozen ground strength, Earthwork, Construction equipment, Excavation.

41-1316
Determining loads on multi-blade milling tools. [Opredelenie nagruzok na mnogoreztsovom frezernom rabochem organe],
Zakharov, V.A., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.30-36, In Russian. 4 refs.
Frozen ground strength, Construction equipment, Earthwork, Loads (forces), Design.

41-1317
Determining servomechanism parameters of drop-wedge percussive machines. [K opredeleniiu parametrov slediashchego mekhanizma mashin udarnogo deistviia so svobodno sbrasyvaemym klinom],
Aranzon, M.I., et al, Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.36-41, In Russian. 5 refs.
Vashchuk, I.M.
Frozen ground strength, Percussion drilling, Construction equipment, Design.

41-1318
Energy distribution of drop-wedge percussive machines with servomechanism. [Raspredelenie energii sbrasyvaemogo rabochego organa mashin udarnogo deistviia so slediashchim mekhanizmom],
Aranzon, M.I., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.41-47, In Russian. 3 refs.
Percussion drilling, Frozen ground strength, Analysis (mathematics).

41-1319
Skidding coefficient of caterpillar rippers on frozen ground and hard rocks. [Koeffitsient buksovaniia gusenichnykh rykhlitelei na merzlykh gruntakh i skal'nykh porodakh],
Efimov, B.A., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.47-49, In Russian. 8 refs.
Earthwork, Cold weather performance, Construction equipment, Frozen ground.

41-1320
Determining conditions for rational operation of rippers. [K opredeleniiu uslovii ratsional'nogo ispol'zovaniia rykhlitelei aktivnogo deistviia],
Polonskii, G.L., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.49-52, In Russian. 5 refs.
Earthwork, Construction equipment, Design, Excavation, Frozen ground.

41-1321
Studying the influence of cutting speed and cutting-tool parameters on frozen ground excavation. [Issledovanie vliianiia skorosti rezaniia i parametrov reztsov na kharakter razrusheniia merzlogo grunta],
Sokolov, L.K., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.53-55, In Russian. 2 refs.
Earthwork, Frozen ground strength, Construction equipment, Design, Excavation.

41-1322
Studying the process of frozen ground excavation by cutting blades of a continuous action trenching machine. [Issledovanie protsessa rezaniia merzlogo grunta zub'iami transheinogo ekskavatora nepreryvnogo deistviia],
Sokolov, L.K., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.57-63, In Russian. 2 refs.
Frozen ground strength, Earthwork, Trenching, Design.

41-1323
Studying hydraulic drive of drilling equipment at low temperatures. [Issledovanie gidroprivoda buril'noi mashiny v usloviiakh ekspluatatsii pri nizkikh temperaturakh],
Makushkin, D.O., et al, Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.63-68, In Russian.
Goikhman, IA.A., Kagan, I.L.
Permafrost physics, Rotary drilling, Foundations, Piles, Cold weather performance.

41-1324
Construction of mathematical models of well drilling processes in frozen ground based on experimental investigations. [Postroenie matematicheskikh modelei protsessa bureniia skvazhin v merzlykh gruntakh na osnove eksperimental'nykh issledovanii],
Bugaev, V.G., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.69-73, In Russian. 4 refs.
Drilling, Wells, Permafrost thermal properties, Mathematical models.

41-1325
Studying the working process of hydropneumatic hammers of the EO-2621 excavators. [Issledovanie rabochego protsessa gidropnevmaticheskogo molota k ekskavatoru EO-2621],
Karnaukhov, A.V., et al, Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.74-78, In Russian. 1 ref.
Vil'derman, V.N., Shadrin, A.V., Odyshev, A.G.
Frozen rock strength, Drilling, Rock excavation, Hammers, Construction equipment, Design.

41-1326
Stand for accelerated tests of bulldozer engine life. [Stend dlia uskorennykh resursnykh ispytanii bul'dozernogo oborudovaniia],
Mikheenko, V.V., Issledovanie mashin dlia razrabotki merzlykh gruntov (Studies of frozen ground excavation equipment) edited by A.A. IArkin, Moscow, 1978, p.78-82, In Russian. 4 refs.
Earthwork, Construction equipment, Cold weather performance, Tests, Excavation, Frozen ground.

41-1327
Arctic thermal design.
Lunardini, V.J., *Mechanical engineering*, May 1985, 107(5), MP 2167, p.70-75.
Permafrost thermal properties, Ice accretion, Thermal regime, Polar regions, Freeze thaw cycles, Engineering, Icing, Permafrost preservation, Hot oil lines.

41-1328
Offshore outlook: the American Arctic.
Jahns, H.O., *Mechanical engineering*, May 1985, 107(5), p.76-82.
Offshore drilling, Offshore structures, Ice conditions, Sea ice, Ice navigation, Icebreakers, Ice loads, Design.

41-1329
Army research could reduce dangers posed by sea ice.
Tucker, W.B., *Alaska construction and oil*, Mar. 1984, 25(3), MP 2168, p.20-24.
Ice strength, Ice physics, Ice cores, Sea ice, Remote sensing, Ice conditions, Engineering, Offshore structures, Offshore drilling, Pressure ridges, Ice pileup, Ice override.

41-1330
Alaska testlab: helping contractors avoid costly mistakes. *Alaska construction and oil*, July 1984, 25(7), p.36-40.
Permafrost, Laboratory techniques, Cold chambers, Equipment, Ground water, Peat, Concrete strength, Soil compaction, Measuring instruments, United States—Alaska.

41-1331
Southern tundras of Taymyr. [IUzhnye tundry Taimyra],
Chernov, IU.I., ed, Leningrad, Nauka, 1986, 208p., In Russian. For selected papers see 41-1332 through 41-1341. Refs. passim.
Matveeva, N.V., ed.
Tundra, Plant ecology, Cryogenic soils, Soil microbiology, Algae, Mosses, Lichens, Ecosystems, Seasonal variations, Continuous permafrost, USSR—Taymyr Peninsula.

41-1332
Vegetation of southern tundras in western Taymyr Peninsula. [Rastitel'nost' iuzhnykh tundr na Zapadnom Taimyre],
Matveeva, N.V., et al, IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva. Leningrad, Nauka, 1986, p.5-67, In Russian. 19 refs.
Zanokha, L.L.
Tundra, Permafrost distribution, Permafrost depth, Plant ecology, Ecosystems, Vegetation patterns, Subarctic regions, Snow cover effect.

41-1333
Soil algae in southern tundras of Taymyr. [Pochvennye vodorosli v iuzhnykh tundrakh Taimyra],
Sdobnikova, N.V., IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.68-79, In Russian. 16 refs.
Permafrost depth, Vegetation patterns, Soil microbiology, Algae, Mosses, Tundra.

41-1334
Hepatics in the vicinity of Kresty village (southern tundra subzone, western Taymyr). [Pechenochnye mkhi okrestnostei pos. Kresty (podzona iuzhnykh tundr, zapadnyi Taimyr)],
Zhukova, A.L., IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.80-88, In Russian. 5 refs.
Plant ecology, Mosses, Ecosystems, Tundra.

41-1335
Leafy mosses in the vicinity of Kresty village (southern tundra subzone, western Taymyr). [Listostebel'nye mkhi okrestnostei pos. Kresty (podzona iuzhnykh tundr, zapadnyi Taimyr)],
Kannukene, L.R., et al, IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.89-100, In Russian. 15 refs.
Matveeva, N.V.
Mosses, Ecosystems, Tundra, Permafrost depth, Plant ecology.

41-1336
Vascular plant flora in the vicinity of Kresty village. [Flora sosudistykh rastenii okrestnostei pos. Kresty],
Matveeva, N.V., et al, IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.101-117, In Russian. 17 refs.
Zanokha, L.L.
Plant ecology, Ecosystems, Plant physiology, Tundra, Polar regions, Cryogenic soils, Permafrost depth.

41-1337
Forms of vascular plants in the southern tundra subzone of Taymyr. [Zhiznennye formy sosudistykh rastenii podzony iuzhnykh tundr na Taimyre],
Polozova, T.G., IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.122-134, In Russian. 13 refs.
Active layer, Vegetation, Plant ecology, Ecosystems, Grasses, Tundra.

41-1338
Seasonal dynamics of plant communities in the southern tundra subzone of Taymyr. [Sezonnaia dinamika rastitel'nykh soobshchestv v podzone iuzhnykh tundr Taimyra],
Zanokha, L.L., IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.135-150, In Russian. 16 refs.
Tundra, Plant ecology, Ecosystems, Meadow soils, Cryogenic soils, Subarctic landscapes.

41-1339
Microorganisms in the communities of southern Taymyr tundras. [Mikroorganizmy v soobshchestvakh iuzhnykh tundr Taimyra],
Parinkina, O.M., IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.151-168, In Russian.
Tundra, Soil composition, Soil chemistry, Soil microbiology, Microelement content, Seasonal variations.

41-1340
Chemical properties of tundra soils in the Kresty village area (western Taymyr). [Nekotorye khimicheskie svoistva tundrovykh pochv raiona pos. Kresty (zapadnyi Taimyr)],
Chugunova, M.V., IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.169-173, In Russian. 12 refs.
Soil profiles, Cryogenic soils, Tundra, Landscape types, Permafrost depth, Soil composition.

41-1341
Southern tundras in the system of zonal subdivision. [IUzhnye tundry v sisteme zonal'nogo deleniia],
Chernov, IU.I., et al, IUzhnye tundry Taimyra (Southern tundras of Taymyr) edited by IU.I. Chernov and N.V. Matveeva, Leningrad, Nauka, 1986, p.192-204, In Russian. 55 refs.
Matveeva, N.V.
Tundra, Landscape types, Forest tundra, Classifications, Geography, Vegetation, Climatic factors.

41-1342
Lithogenesis of ground ice. [Petrogenez podzemnykh l'dov],
Solomatin, V.I., Novosibirsk, Nauka, 1986, 216p., In Russian with abridged English table of contents enclosed. Refs. p.209-215.
Glacier ice, Permafrost structure, Ice veins, Ground ice, Ice structure, Ice physics, Impurities, Ice formation.

41-1343
Forestry in permafrost regions. [Merzlotnoe lesovedenie],
Pozdniakov, L.K., Novosibirsk, Nauka, 1986, 192p., In Russian with English table of contents enclosed. Refs. p.182-191.
Thermokarst, Cryogenic soils, Taiga, Forestry, Permafrost depth, Permafrost hydrology, Soil erosion, Permafrost thermal properties, Active layer, Revegetation, Snow cover effect.

41-1344
Alpine phytocenotic systems of the Subarctic. [Gornye fitotsenoticheskie sistemy Subarktiki],
Norin, B.N., ed, Leningrad, Nauka, 1986, 292p., In Russian with abridged English table of contents enclosed. Refs. p.279-290.
Subarctic landscapes, Plant ecology, Ecosystems, Alpine landscapes, Deserts, Taiga, Microrelief, Subpolar regions, Microclimatology.

41-1345
Suitability of polyvinyl chloride well casings for monitoring munitions in ground water.
Parker, L.V., et al, *Ground water monitoring review*, Summer 1986, 6(3), MP 2171, p.92-98, 27 refs.
Jenkins, T.K.
Well casings, Ground water, Solutions, Monitors, Materials, Degradation, Soil microbiology.
A number of samples of polyvinyl chloride (PVC) well casings used for ground water monitoring that varied in schedule, diameter or manufacturer were placed in contact with low concentrations of aqueous solutions of TNT, RDX, HMX and 2,4-DNT for 80 days. Analysis indicated that there was more loss of TNT and HMX with the PVC casing than with the glass controls, but that the amount lost was, for the most part, equivalent among different types. A second experiment was performed to determine if these losses were due to sorption or if biodegradation was involved. Several different ground water conditions were simulated by varying salinity, initial pH and dissolved oxygen content. The only case where there was an increased loss of any substance due to the presence of PVC casing was with the TNT solution under nonsterile conditions. The extent of loss was small, however, considering the length of the equilibration period. This increased loss is thought to be associated with increased microbial degradation rather than sorption.

41-1346
Fourth International Conference on Permafrost, Fairbanks, 18-22 July 1983.
Jahn, A., *Biuletyn peryglacjalny*, 1986, No.31, p.119-121.
Permafrost physics, Permafrost beneath structures, Meetings, Organizations.

41-1347
Remarks on the origin of palsa frost mounds.
Jahn, A., *Biuletyn peryglacjalny*, 1986, No.31, p.123-130, 21 refs.
Discontinuous permafrost, Frost mounds, Permafrost physics, Origin, Peat, Snow cover effect, Landforms.

41-1348
Analysis of ice crystallization in continuous crystallizers based on a particle size-dependent growth rate model.
Shirai, Y., et al, *Chemical engineering science*, 1986, 41(9), p.2241-2246, 18 refs.
Sakai, K., Nakanishi, K., Matsuno, R.
Ice crystal growth, Ice crystal size, Particle size distribution, Heat transfer, Solutions, Ice crystal nuclei, Mathematical models.

41-1349
Removal of trace-level organics by slow-rate land treatment.
Parker, L.V., et al, *Water research*, Nov. 1986, 20(11), MP 2170, p.1417-1426, 36 refs.
Jenkins, T.F.
Waste treatment, Water treatment, Land reclamation, Soil pollution, Countermeasures, Degradation, Chemical analysis.
A 2 yr study was performed on an outdoor, prototype, slow-rate system to determine the removal efficiency for 16 organic substances in wastewater. The 16 organics were chloroform, benzene, toluene, chlorobenzene, bromoform, m-dichlorobenzene, dibromochloromethane, penthane, hexane, nitrobenzene, m-nitrotoluene, diethylphthalate, PCB 1242, napthalene, phenanthrene and pentachlorophenol. The initial concentration of each of these substances in the wastewater was approx. 50 microgram/l. Initial removal was via volatilization during spray application. The final concentration of substances after spraying correlated well with their calculated liquid-phase transfer coefficients and the substances' initial concentration losses were up to 70% for the most volatile components.

41-1350
Condensing steam tunnel heat sinks.
Lunardini, V.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1986, SR 86-24, 29p., ADB-106 677, 19 refs.
Heat sinks, Tunnels, Heat transfer, Rocks, Thermodynamics, Condensation, Thermal conductivity, Mathematical models, Temperature effects, Air masses.
This report examines the feasibility of condensing steam from an underground power source by heat conduction into the surrounding rocks. A mathematical model was utilized such that the condensing steam delivered a variable flux of energy to the walls of the condenser tunnel. Heat flow in the surrounding rock was limited to conduction. A numerical analysis of the transient problem results in predictions of tunnel lengths and diameters needed to dissipate specified condenser heat loads as a function of initial steam pressure, surrounding rock thermal properties, and ambient rock temperature. The rock thermal conductivity exerts a large influence upon the required tunnel length, with tunnel length decreasing with increasing rock conductivity. The quantitative predictions of the model indicate that a condensing steam tunnel in rock may be competitive with circulating water or ice/water heat dissipation modes.

41-1351
Ground-water contamination at Peters Creek, Municipality of Anchorage, Alaska: ground-water occurrence and movement.
Munter, J.A., *Alaska. Division of Geological and Geophysical Surveys. Report of investigations*, Sep. 1986, No.86-24, 12p., 5 refs.
Ground water, Water pollution, Wells, Hydrogeology, Water flow, Quaternary deposits, United States—Alaska—Anchorage.

41-1352
Recommendations for a U.S. ice coring program.
National Research Council. Polar Research Board, Washington, D.C., National Academy Press, 1986, 67p., Refs. passim.
Drill core analysis, Ice cores, Ice coring drills, Research projects, Greenland, Antarctica.
The present ice coring program both in Antarctica and Greenland is reviewed and recommendations are made for improvements and expansion of the program. Reasons for scientific studies are discussed, ice core drilling and analysis techniques are assessed, and the logistics of the program are examined. Major elements of the U.S. program are shown, including requirements, capabilities, techniques, measurements, models, storage, interdisciplinary considerations and management, and international cooperation. Recommendations are made for the program and an action plan for implementing these recommendations is promulgated. Appendixes give insight to CRREL activity in deep drilling; international ice drilling technology; laboratory analysis of ice cores; the storage facility at SUNY Buffalo; and the motivation for CO2 research.

41-1353
Geography of marine navigation. [Geografiia morskogo sudokhodstva],
Nadtochii, G.L., Moscow, Transport, 1985, 263p., In Russian with abridged English table of contents enclosed. 24 refs.
Icebergs, Ice navigation, Ports, Transportation, Geography, Sea ice, Arctic Ocean, Antarctica.
In part 1 of this book general problems of navigation conditions, route selection, ship operation and economics of marine transportation are discussed. Part 2 deals with Soviet sea transport in various oceans and seas, including the Arctic and Antarctic, parts 3-5 with sea routes of the socialist and capitalist countries, and international sea routes, respectively. Sea routes and navigation conditions in antarctic seas are discussed on p.251-252. Risks to navigation in antarctic seas, such as inadequate mapping of location of some islands and ice shelves, severe weather conditions, drifting ice and icebergs, the whiteout phenomenon, frequent fog, etc., are described. Procedures followed by Soviet fishing and whaling fleets in route selection and navigation are explained.

41-1354
State-of-the-art of ground aircraft deicing technology.
Mayer, D., *SAE technical paper series*, [1986], No.861656, Aerospace Technology Conference and Exposition, Long Beach, CA, Oct. 13-16, 1986. [Proceedings], 13p., Refs. p.11-13.
Chemical ice prevention, Ice removal, Aircraft landing areas, Road icing, Aircraft icing, Countermeasures, Safety, Freezing points, Environmental impact, Meteorological factors.

41-1355
Effects of cold environment on rapid runway repairs.
Abele, G., MP 2169, Army Science Conference, June 17-19, 1986. Proceedings, Vol.1, U.S. Department of Defense, [1986], p.1-9, 15 refs.
Runways, Cold weather construction, Road maintenance, Military engineering, Wind factors, Temperature effects, Snowfall.

41-1356
Techniques to measure the spectral reflectance of ice.
Bolsenga, S.J., et al, *SPIE—The International Society for Optical Engineering. Proceedings*, 1984, Vol.489, Ocean optics 7. Edited by M.A. Blizard, p.384-391, 14 refs.
Greene, G.M.
Ice optics, Spectra, Snow cover effect, Radiometry, Reflectivity, Measuring instruments.

41-1357
Nonlinear constitutive model for ice.
Szyszkowski, W., et al, *International journal of solids and structures*, 1985, 21(3), p.307-321, 12 refs.
Dost, S., Glockner, P.G.
Ice models, Ice creep, Ice mechanics, Ice structure, Rheology, Stresses, Mathematical models, Temperature effects.

41-1358
Geoarchaeology of northern regions: lessons from cryoturbation at Onion Portage, Alaska.
Schweger, C., Archaeological sediments in context. Edited by J.K. Stein and W.R. Farrand, Orono, ME, Institute for Quaternary Studies, Center for Study of Early Man, 1985, p.127-141, Refs. p.139-141.
Cryoturbation, Frost action, Geomorphology, Geology, Paleoclimatology, Permafrost, Vegetation, Paleoecology, United States—Alaska—Onion Portage.

41-1359
On fracture mechanics in lifting an ice sheet.
Liu, C.H., et al, *International journal of fracture*, July 1985, 28(3), p.189-197, With French summary. 6 refs.
Lee, L.H.N.
Ice removal, Road icing, Ice sheets, Ice cracks, Ice solid interface, Railroad tracks, Equipment, Analysis (mathemactics).

41-1360
Radar backscatter from land, sea, rain and snow at millimeter wave length.
Dyer, F.B., et al, IEE electromagnetic wave series, No.20, Advances in radar techniques. Edited by J. Clarke, London, Peter Peregrinus Ltd., 1985, p.250-254, 11 refs.
Currie, N.C., Applegate, M.S.
Snow acoustics, Radar echoes, Backscattering, Sea water, Rain, Landforms, Radio waves.

41-1361
Weddell-Scotia sea marginal ice zone observations from space, Oct. 1984.
Carsey, F.D., et al, *Journal of geophysical research*, Mar. 15, 1986, 91(C3), p.3920-3924, 12 refs.
Sea ice, Icebergs, Ice surveys, Radar photography, Ice edge, Ice floes, Spaceborne photography, Antarctica—Weddell Sea, Scotia Sea.
Imagery from the shuttle imaging radar-B experiment as well as other satellite and meteorological data are examined to learn more about the open sea ice margin of the Weddell-Scotia seas region. At the ice edge, the ice forms into bandlike aggregates of small ice floes similar to those observed in the Bering Sea. The radar backscatter characteristics of these bands suggest that their upper surface is wet. Further into the pack, the radar imagery shows a transition to large floes. In the open sea, large icebergs and long surface gravity waves are discernible in the radar images. (Auth.)

41-1362
All-Union Conference on ground water flooding of built-up areas (forecasting and countermeasures), 3rd, Novosibirsk, 1984. Proceedings. [Materialy], Vsesoiuznoe soveshchanie po protsessam podtopleniia zastroennykh territorii gruntovymi vodami (prognoz i zashchita), 3rd, Novosibirsk, 1984, Moscow, Nauka, 1985, 126p., In Russian. For selected papers see 41-1363 and 41-1364. Refs. passim.
Trofimov, V.T., ed.
Slope processes, Construction sites, Buildings, Solifluction, Naleds, Foundations, Flooding, Thermokarst, Meltwater, Ground water, Avalanches, Permafrost distribution.

41-1363
Ground water flooding of towns in Siberia, the Far East and the Far North. [Protsess podtopleniia gruntovymi vodami territorii gorodov Sibiri, Dal'nego Vostoka i Kraĭnego Severa],
Gospodinov, D.G., Vsesoiuznoe soveshchanie po protsessam podtopleniia zastroennykh territorii gruntovymi vodami (prognoz i zashchita), 3rd, Novosibirsk, 1984 (All-Union Conference on ground water flooding of built-up areas (forecasting and countermeasures), 3rd, Novosibirsk, 1984. Proceedings, Moscow, Nauka, 1985, p.27-33, In Russian.
Slope processes, Permafrost distribution, Solifluction, Residential buildings, Landslides, Industrial buildings, Naleds, Thermokarst, Avalanches, Foundations, Urban planning, Flooding, Meltwater, Water level.

41-1364
Thermal and moisture regimes of clay soils in aeration zones of construction sites in the Far East and the prevention of flooding. [Osobennosti vodnogo i termicheskogo rezhimov glinistykh gruntov zony aeratsii zastraivaemykh territoriĭ v raĭonakh Dal'nego Vostoka i voprosy bor'by s podtopleniem],
Fedorov, V.I., Vsesoiuznoe soveshchanie po protsessam podtopleniia zastroennykh territoriĭ gruntovymi vodami (prognoz i zashchita), 3rd, Novosibirsk, 1984 (All-Union Conference on ground water flooding of built-up areas (forecasting and countermeasures), 3rd, Novosibirsk, 1984. Proceedings, Moscow, Nauka, 1985, p.93-104, In Russian. 4 refs.
Clay soils, Construction sites, Flooding, Frost heave, Countermeasures, USSR—Transbaikal.

41-1365
Hydrologic investigations of landscapes. [Gidrologicheskie issledovaniia landshaftov],
Bachurin, G.V., ed, Novosibirsk, Nauka, 1986, 208p., In Russian. For selected papers see 41-1366 through 41-1375. Refs. passim.
Korytnyĭ, L.M., ed.
Taiga, Paludification, Landscape types, Land reclamation, Thermokarst, Permafrost depth, Alassy, Swamps, Human factors, Permafrost hydrology, Permafrost distribution.

41-1366
Hydrologic aspects of swamp stability. [Gidrologicheskie aspekty ustoĭchivosti bolot],
Geleta, I.F., Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.49-57, In Russian. 16 refs.
Taiga, Freeze thaw cycles, Active layer, Paludification, Snowmelt, Runoff, Vegetation factors, Analysis (mathematics), Hydrology, Cryogenic soils, Precipitation (meteorology).

41-1367
Human factor impacts on Siberian floodplains during land reclamation. [Voprosy antropogennogo vozdeĭstviia na poĭmennye territorii Zapadnoĭ Sibiri pri gidromelioratsiiakh],
Malik, L.K., Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.64-71, In Russian. 7 refs.
Land reclamation, Plains, Swamps, Permafrost beneath rivers.

41-1368
Influence of forestry and forest complexes on river runoff. [Vliianie antropogennykh lesnykh kompleksov na rechnoĭ stok],
Mishon, V.M., et al, Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.71-75, In Russian. 10 refs.
Dmitrieva, V.A., Kaliuzhnyĭ, L.A.
Floods, Forest strips, Forestry, Snow accumulation, Forest soils, Snow water equivalent, Protective vegetation, Rivers, Runoff.

41-1369
Natural water bodies as indicators of landscapes. [Estestvennye vodoemy kak indikatory landshafta],
Aseev, V.V., et al, Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.75-80, In Russian. 5 refs.
Orel, G.F.
Glacial lakes, Permafrost distribution, Thermokarst, Landscape types, Taiga, Alpine landscapes, Vegetation, Valleys.

41-1370
Alassy as indicators of soil moisture. [Alasy kak indikatory uvlazhnennosti territorii],
Bosikov, N.P., Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.80-85, In Russian. 15 refs.
Permafrost structure, Permafrost hydrology, Thermokarst, Alassy, USSR—Yakutia.

41-1371
Solutions of some hydrologic problems for unexplored rivers in eastern Siberia. [Nekotorye resheniia gidrologicheskikh zadach dlia neizuchennykh rek Vostochnoĭ Sibiri],
Petenkov, A.V., Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.132-136, In Russian.
River basins, Permafrost distribution, Permafrost hydrology, Permafrost beneath rivers, Landscape types, Thermal regime, Stream flow, Ice conditions, Ice navigation.

41-1372
Allowing for physiographic factors in estimating maximum river runoff for the swampy forest zone of Priirtysh'e. [Uchet fiziko-geograficheskikh faktorov pri otsenke maksimal'nogo stoka rek lesobolotnoĭ zony Priirtysh'ia],
Trofimova, E.V., Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.143-147, In Russian. 8 refs.
River basins, Ice conditions, Drainage, Landscape types, Stream flow, USSR—Irtysh River.

41-1373
Possibility of distinguishing landscape types and evaluating their hydrologic properties from space photographs. [Vozmozhnosti vyiavleniia landshaftov i otsenka ikh gidrologicheskikh svoĭstv po kosmicheskim snimkam],
Markus, TA.A., Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.153-159, In Russian. 10 refs.
Spaceborne photography, Photointerpretation, River basins, Landscape types, Hydrology.

41-1374
Regularities governing the formation of river water resources in Siberia. [Zakonomernosti formirovaniia resursov rechnykh vod na territorii Sibiri],
Plitkin, G.A., Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.171-180, In Russian. 6 refs.
River basins, Ice conditions, Snow water equivalent, Landscape types, Stream flow, Water balance, Heat balance, Water reserves.

41-1375
Peculiarities of water balance structure in different landscapes of Priangar'e. [Osobennosti struktury vodnogo balansa razlichnykh landshaftov Priangar'ia],
Berkin, N.S., et al, Gidrologicheskie issledovaniia landshaftov (Hydrologic investigations of landscapes) edited by G.V. Bachurin and L.M. Korytnyĭ, Novosibirsk, Nauka, 1986, p.187-193, In Russian. 6 refs.
Kravchenko, V.V., Blokhin, IU.I., Shakhov, P.A.
Runoff, Mountains, Taiga, Ice conditions, Evaporation, Water blance, Landscape types, USSR—Angara River.

41-1376
Thermal performance of the exterior envelopes of buildings; Proceedings.
ASHRAE/DOE/BTECC Conference [on] Thermal Performance of the Exterior Envelopes of Buildings, 3rd, Clearwater Beach, FL, Dec. 2-5, 1985, ASHRAE SP 49, Atlanta, GA, American Society of Heating, Refrigerating and Air Conditioning Engineers, 1986, 1422p., Refs. passim. For selected papers see 41-1377 through 41-1393.
Thermal insulation, Buildings, Heat transfer, Heat loss, Design, Models, Thermal conductivity, Materials, Meetings, Temperature effects.

41-1377
In-situ assessment of two retrofit insulations.
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Thermal insulation, Walls, Heat flux, Houses, Moisture meters, Cellular materials, Measuring instruments, Resins.
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Spaceborne photography, Infrared spectroscopy, Snow cover, Cloud cover.

41-1447
Cloud physics and modification. [Fizika oblakov i aktivnye vozdeĭstviia],
Zabolotskaia, T.N., ed, *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.218, 113p., In Russian.
Khusid, S.V., ed.
Supercooled fog, Supercooled clouds, Cloud seeding, Airborne equipment, Artificial precipitation, Artificial nucleation, Dry ice (trademark), Silver iodide, Ice formation, Sampling, Samplers.

41-1448
Suitability of stratiform clouds of the transition seasons for modification by crystallization agents to produce additional precipitation. [Stepen' prigodnosti sloistoobraznykh oblakov perekhodnykh sezonov goda k vozdeĭstviiu kristallizuiushchimi reagentami s tsel'iu poluchenia dopolnitel'nykh osadkov],
Khusid, S.V., *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.218, p.27-31, In Russian. 3 refs.
Cloud seeding, Carbon dioxide, Artificial nucleation, Artificial precipitation.

41-1449
Possibilities of dispersing supercooled stratiform clouds and fog of large vertical extension. [K voprosu o vozmozhnosti rasseianiia pereokhlazhdennykh oblakov sloistykh form i tumanov bol'shoĭ vertikal'noĭ protiazhennosti],
Voronov, G.S., *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.218, p.31-43, In Russian. 7 refs.
Supercooled clouds, Supercooled fog, Fog dispersal, Artificial nucleation, Cloud seeding, Ice nuclei.

41-1450
Improved sampler PLIAS-2 for capturing ice-forming nuclei on membrane filters. [Usovershenstvovannyĭ probootbornik PLIAS-2 dlia vziatiia prob l'doobrazuiushchikh iader na membrannye fil'try],
Silaev, A.V., et al, *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.218, p.76-80, In Russian. 3 refs.
Khusid, S.V., Chumachenko, A.I.
Cloud seeding, Ice nuclei, Samplers, Airborne equipment.

41-1451
Using equipment designed for the "Selena-1" filters in studying natural and artificial ice-forming nuclei. [Issledovanie estestvennykh i iskusstvennykh iader l'doobrazovaniia s pomoshch'iu usovershenstvovannoĭ ustanovki dlia proiavleniia fil'trov "Selena-1"],
Silaev, A.V., et al, *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.218, p.80-85, In Russian. 4 refs.
Tovstenko, L.M., Ivanchenko, L.V.
Cloud seeding, Ice nuclei, Artificial nucleation, Equipment, Design.

41-1452
Studying vertical distribution of ice-forming nuclei. [Izuchenie vysotnogo raspredeleniia kontsentratsii iader l'doobrazovaniia],
Khusid, S.V., et al, *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.218, p.85-89, In Russian. 3 refs.
Silaev, A.V., Tovstenko, L.M., Chumachenko, A.I.
Aerosols, Silver iodide, Ice nuclei, Samplers, Airborne equipment, Sampling.

41-1453
Kinetics of the appearance of photostimulated ice-forming activity centers in silver iodide aerosols. [Kinetika vozniknoveniia tsentrov fotostimulirovannoĭ l'doobrazuiushcheĭ aktivnosti v aerozoliakh ĭodistogo serebra],
Oleĭnik, R.V., *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.218, p.93-97, In Russian. 3 refs.
Aerosols, Ice nuclei, Silver iodide, Mathematical models.

41-1454
Structural anomalies in ice-forming silver iodide aerosols. [Strukturnye anomalii v l'doobrazuiushchikh aerozoliakh ĭodistogo serebra],
Borovoĭ, N.A., et al, *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.218, p.97-99, In Russian. 3 refs.
Shiianovskiĭ, V.I., Bakhanova, R.A., Oleĭnik, R.V.
Cloud seeding, Aerosols, X ray analysis, Structural analysis, Silver iodide.

41-1455
Carbon dioxide gas exchange components of tundra plants at various temperatures. [Sostavliaiushchie CO2-gazoobmena tundrovykh rasteniĭ v usloviiakh razlichnoĭ temperatury],
Lediaĭkina, N.A., et al, *Botanicheskiĭ zhurnal*, Aug. 1986, 71(8), p.1067-1073, In Russian. Refs. p.1072-1073.
Voznesenskiĭ, V.L., Luk'ianova, L.M.
Tundra, Cryogenic soils, Soil temperature, Photosynthesis, Plant physiology, Transpiration, Plant ecology.

41-1456
Soil reaction effect on plant distribution in nival communities in southeastern Chukotskiy Peninsula. [Vliianie reaktsii pochvy na raspredelenie rasteniĭ v nival'nykh soobshchestvakh na iugo-vostoke Chukotskogo poluostrova],
Razzhivin, V.IU., *Botanicheskiĭ zhurnal*, Aug. 1986, 71(8), p.1088-1097, In Russian. 21 refs.
Nivation, Ecosystems, Cryogenic soils, Landscape types, Vegetation patterns, Limestones, Sands, Plant ecology, Soil chemistry, Plant physiology.

41-1457
Where are the former glacial relics in Guilin area.
Shi, Y., et al, *Journal of glaciology and geocryology*, 1986, 8(2), p.97-106, 11 refs., In Chinese with English summary.
Cui, Z., Li, J., Zhou, S.
Glacial deposits, Glaciation, Paleoclimatology, Karst, Landscape types, X ray diffraction, Clay minerals, Pollen, Thermal analysis, Theories.

41-1458
Paleoglacial traces and series of mutiglaciation in the Luojieshan Mountain.
Cui, Z., et al, *Journal of glaciology and geocryology*, 1986, 8(2), p.107-118, 3 refs., In Chinese with English summary.
Xie, Y., Li, H.
Glaciology, Geomorphology, Ice age theory, Glacial erosion, Moraines, Paleoclimatology, Landforms.

41-1459
Application of NOAA/TIROS satellite data to snowmelt-runoff of Heihe Basin in Qilian Mountain.
Zhang, S., et al, *Journal of glaciology and geocryology*, 1986, 8(2), p.119-130, 5 refs., In Chinese with English summary.
Zeng, Q.
Runoff, Snowmelt, Remote sensing, Snow cover distribution, Models, Analysis (mathematics), Mountains, Irrigation, Diurnal variations, China—Qilian Mountain.

41-1460
Study on land evaporability and dry-wet state of Qinghai-Xizang Plateau.
Zeng, Q., et al, *Journal of glaciology and geocryology*, 1986, 8(2), p.131-142, 10 refs., In Chinese with English summary.
Xie, Y.
Evaporation, Precipitation (meteorology), Meteorological factors, Mountains, Mapping, Seasonal variations, China—Qinghai-Xizang Plateau.

41-1461
Sea ice observations and measurements at Davis, East Antarctica.
Zhang, Q., *Journal of glaciology and geocryology*, 1986, 8(2), p.143-148, 5 refs., In Chinese with English summary.
Ice surveys, Sea ice distribution, Ice formation, Ice breakup, Ice growth, Ice melting, Antarctica—Davis Station.
Sea ice formation, breakup and physical features were observed from Jan. to Dec. 1981, along the coast at Davis Station. Changes of ice thickness and water temperature beneath the ice were measured. It was found that the ice begins to form in mid-Mar. and grows to its maximum thickness of 170 cm in Nov. The ice rapidly thickens at 10-12 cm/week in the first 3 weeks due to snow falling on the newly formed ice. Growth rate was 6.5 to 5 cm a week from Apr. to July, slowing down to 2-4 cm a week from Aug. to early Nov. Water temperature beneath the ice varied between -1.8 C and -2.6 C, dropping down to a minimum of -2.6 C from mid-Mar. to the end of May as air temperature fell. The ice grew rapidly in super-cold water at that stage. From Oct. to early Nov. the sea water temperature rose gradually and then the ice began melt. Sea ice in the vicinity of Davis is composed of 3 layers: the upper layer, about 80 cm thick, consisting of white cellular and laminar fine ice frozen and formed from Mar. to May; the middle layer, which is a uniform column fiber of frozen ice 80 cm thick, formed from June to Sep.; and the lower layer, about 10 cm thick, the bottom frozen ice mixed with diatom and alga. Sea ice breakup between the end of Nov. and early Dec. occurs suddenly, a direct effect of strong wind and wave, the rise of water temperature and ice melting being the basic cause. (Auth. mod.)

41-1462
Types and characteristics of modern periglaciation along the Qinghai-Xizang Highway.
Wang, S., *Journal of glaciology and geocryology*, 1986, 8(2), p.149-158, 8 refs., In Chinese with English summary.
Permafrost thermal properties, Periglacial processes, Thermal regime, Moisture, Frost heave, Geomorphology, Mountains, Freeze thaw cycles, China—Qinghai-Xizang Plateau.

41-1463
Application of (14)C dating to the studies of glacial geology and geocryology.
Gu, G., et al, *Journal of glaciology and geocryology*, 1986, 8(2), p.159-165, 7 refs., In Chinese with English summary.
Ding, Y.
Glacial geology, Geocryology, Carbon isotopes, Ice dating, Loess, Moraines, Grain size, Radioactive age determination, China—Tian Shan.

41-1464
New progress of glacier inventory in Tianshan Mountains.
Liu, C., et al, *Journal of glaciology and geocryology*, 1986, 8(2), p.167-170, 3 refs., In Chinese with English summary.
Ding, L.
Glacier mass balance, Mountain glaciers, River basins, Glacial hydrology, Distribution, China—Tian Shan.

41-1465
Distribution of existing glaciers in the Qaidam Basin.
Yang, H., et al, *Journal of glaciology and geocryology*, 1986, 8(2), p.171-175, 2 refs., In Chinese with English summary.
An, R.
Glacier mass balance, Glacial rivers, Mountain glaciers, Distribution, Glacier melting, China—Qaidam Basin.

41-1466
Recent trends in the potential role of seasonal snow cover in the CO2 induced climate change.
Li, P., *Journal of glaciology and geocryology*, 1986, 8(2), p.176-178, In Chinese.
Carbon dioxide, Snow cover distribution, Climatic changes, Seasonal variations.

41-1467
Dielectric characteristics of snow in microwave frequency.
Koizumi, S., et al, *Electronics letter* July 17, 1986, 22(15), p.823-825, 4 refs.
Sato, K., Sato, T., Shimba, M.
Snow electrical properties, Microwaves, Attenuation, Analysis (mathematics).

41-1468
High strength concrete control.
Sehgal, P., et al, *Concrete*, Oct. 1986, 50(6), p.32-34.
Chattin, J.
Concrete strength, Concrete aggregates, Freeze thaw cycles, Frost resistance, Water cement ratio, Air entrainment.

41-1469
Surface configuration of the antarctic ice sheet in the sector 30 deg E-80 deg E using SEASAT altimetry data.
Shibuya, K., et al, *Tokyo. National Institute of Polar Research. Memoirs*, 1986, Special issue No.43, Symposium on Antarctic Geosciences, 6th, 1985. Proceedings, p.1-12, 19 refs.
Kajikawa, Y., Segawa, J.
Mapping, Ice sheets, Height finding, Sea level, Airborne radar, Antarctica—Mizuho Plateau, Antarctica—Nye Mountains, Antarctica—Napier Mountains, Antarctica—Lambert Glacier, Antarctica—American Highland.
Using Interim Geophysical Data Record (IGDR) of SEASAT radar altimetry, a configuration map of the Antarcitc ice sheet in the area bounded by 30 deg and 80 deg E and latitude 72 deg S is compiled. 7480 footprint data of every second sampling (6.62 km apart) along 63 subsatellite groundtracks are obtained in the area. The resulting configuration resembles the map published by the Scott Polar Research Institute in 1983. 157 ground survey data points from a triangulation survey, satellite Doppler positioning and a previously published topographic map are used to estimate an overall accuracy of the map. The ground survey height is on an average 2.2 m lower than the SEASAT-derived elevation with a standard deviation of 21.5 m, which may reflect the limited data quality of IGDR without retracking correction of the return-pulse waveform. Drawing orthogonals to the contours, ice drainage basins are determined and they are slightly different from the previous ones defined by the oversnow traverse surveys. (Auth.)

41-1470
Processing of sea gravity data using online navigational information of icebreaker *Shirase*.
Segawa, J., et al, *Tokyo. National Institute of Polar Research. Memoirs*, 1986, Special issue No.43, Symposium on Antarctic Geosciences, 6th, 1985. Proceedings, p.13-18, 1 ref.
Kaminuma, K., Fukuda, Y.
Navigation, Gravity, Icebreakers.
The NIPRORI-1 gravimeter of icebreaker *Shirase* was modified so that the ship's navigational data were used in real time. Examples of measurement using the modified system during the 27th JARE are given to show the performance. (Auth.)

41-1471
Comments on the map of free-air gravity anomaly of the antarctic region.
Segawa, J., et al, *Tokyo. National Institute of Polar Research. Memoirs*, 1986, Special issue No.43, Symposium on Antarctic Geosciences, 6th, 1985. Proceedings, p.19-22, 6 refs.
Matsumoto, T., Kaminuma, K.
Maps, Gravity anomalies, Sea ice, Antarctica.
A free-air gravity anomaly map of the Antarctic region was published in 1984 as Special Map Series of National Institute of Polar Research, No.3. In this paper some comments are given as to data distributions for compiling the map and characteristics of the gravity anomalies shown in the map, so that the map may be properly referred to. (Auth.)

41-1472
Accumulation rate of Mizuho Station, East Antarctica: an application of the Pb-210 method.
Masuda, N., et al, *Tokyo. National Institute of Polar Research. Memoirs*, 1986, Special issue No.43, Symposium on Antarctic Geosciences, 6th, 1985. Proceedings, p.159-165, 20 refs.
Harada, K.
Snow accumulation, Radioactive isotopes, Snow water equivalent, Measurement, Antarctica—Mizuho Station.
The lead 210 method for dating was applied to firn samples collected from a 5-m pit at Mizuho Station by the 15th JARE. Two series of measurements were undertaken (Po-210 and Pb-210) producing snow accumulation rates estimated at 19 cm snow per year from the Po-210 profile and at 20 cm snow per year from the Pb-210 profile. The net accumulation rate was estimated at 7.8 g water per year assuming that the density was 0.4 g per cc. These values agreed well with the results of previous studies. The lead 210 method could be applied to estimate snow accumulation rate within an error of 10% as two sigma. (Auth.)

41-1473
Nutrient limitation of the bottom-ice microalga biomass (southeastern Hudson Bay, Canadian Arctic).
Maestrini, S.Y., et al, *Limnology and oceanography*, Sep. 1986, 31(5), p.969-982, 55 refs.
Rochet, M., Legendre, L., Demers, S.
Sea ice, Ice bottom surface, Algae, Marine biology, Canada—Hudson Bay.

41-1474
Sea-ice and the antarctic winter circulation: a numerical experiment.
Mitchell, J.F.B., et al, *Royal Meteorological Society, London. Quarterly journal*, Oct. 1986, 112(474), p.953-969, 41 refs.
Hills, T.S.
Atmospheric circulation, Sea ice, Ice cover effect, Mathematical models, Antarctica.
A numerical experiment has been conducted to test the sensitivity of a global general circulation model to changes in sea-ice extents in the Antarctic during winter. Three 112-day integrations have been made in which all the antarctic sea-ice poleward of 66 S was removed, commencing on 10 June in the second, third and fourth years of a control integration. There was a large increase in sensible heat flux over the anomaly, a warming over the Antarctic confined to the lowest atmospheric layer, and a 2 m/s reduction in the westerly flow around the periphery of the (new) sea-ice margin, in broad agreement with a previous study. The increased heating over the anomaly was accompanied by a decrease in surface pressure which was not found earlier and possible explanations of this discrepancy are considered. The results are related to previous work on the effect of increased CO2 using prescribed changes in sea surface temperature and sea-ice extents. The implications of the results for the parametrization of the heat flux through sea-ice cover, and for coupled ocean-atmosphere models are discussed. (Auth.)

41-1475
Properties of ice accreted in two-stage growth.
Prodi, F., et al, *Royal Meteorological Society, London. Quarterly journal*, Oct. 1986, 112(474), p.1057-1080, 19 refs.
Santachiara, G., Franzini, A.
Ice growth, Ice physics, Laboratory techniques, Hailstone growth.

41-1476
Density of accreted ice.
Prodi, F., et al, *Royal Meteorological Society, London. Quarterly journal*, Oct. 1986, 112(474), p.1081-1090, 13 refs.
Levi, L., Pederzoli, P.
Ice density, Ice accretion, X ray analysis, Laboratory techniques.

41-1477
Ice accretions on fixed cylinders.
Prodi, F., et al, *Royal Meteorological Society, London. Quarterly journal*, Oct. 1986, 112(474), p.1091-1109, 11 refs.
Levi, L., Levizzani, V.
Ice accretion, Ice growth, Ice crystal structure, Ice density.

41-1478
Effect of rimer surface temperature on ice splinter production by the Hallett-Mossop process.
Griggs, D.J., et al, *Royal Meteorological Society, London. Quarterly journal*, Oct. 1986, 112(474), p.1254-1256, 7 refs.
Choularton, T.W.
Ice crystals, Temperature effects, Ice electrical properties, Hoarfrost.

41-1479
Proceedings of the 42nd annual Eastern Snow Conference, Montreal, June 6 and 7, 1985.
Eastern Snow Conference, [1985], 303p., Refs. passim. For individual papers see 40-3532 and 41-1480 through 41-1507.
Snow surveys, Ice surveys, Remote sensing, Runoff, Snow physics, Ice physics, Meetings, Icing, Ice conditions, Snow composition.

41-1480
Development and roles of the Eastern Snow Conference.
Adams, P., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.1-24.
McArthur, B.
Snow surveys, Ice surveys, Meetings, International cooperation.

41-1481
Summer 1979: ice climatology of the Canadian Arctic.
Dey, B., Eastern Snow Conference, 42nd, 1985, [1985], p.25-33, 16 refs.
Sea ice distribution, Ice cover, Remote sensing, Glacial meteorology, Ice edge, Climatology, Mapping, Atmospheric circulation, Canada.

41-1482
Analysis of selected ice accretion measurements on a wire at Mt. Washington.
McComber, P., et al, MP 2173, Eastern Snow Conference, 42nd, 1985, [1985], p.34-43, 12 refs.
Govoni, J.W.
Power line icing, Ice accretion, Ice loads, Transmission lines, Wind velocity, Mathematical models.
Although numerical models have been developed to predict the increase in load on transmission lines due to atmospheric icing, there are very few data available with which to verify them experimentally. The accretion of ice on a wire is a complex three-dimensional phenomenon involving torsion of the wire under the accretion weight, vibration, and breaking of some of the ice. In particular, the Mt. Washington test site used for our experiments experiences strong winds that cause high loads, vibrations, and breaking of ice chunks. Load measurements for a few wire-icing events are analyzed to determine the functional relationship between icing load and time, and how this compares with the predictions of some available numerical models. Results indicate that loads for steady icing conditions tend to increase exponentially with time.

41-1483
Simulation of snow depth in a forest.
Woo, M.-K., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.44-54, 2 refs.
Steer, P.
Snow depth, Forest canopy, Snow accumulation, Snowmelt, Vegetation factors, Models.

41-1484
Snow and ice in Inuit place names in the eastern Canadian Arctic.
Müller-Wille, L., Eastern Snow Conference, 42nd, 1985, [1985], p.55-57.
Ice surveys, Ice formation, Snow surveys, Ice conditions, Snow cover distribution, Canada.

41-1485
Speciation of aluminum in different compartments of a drainage basin during snowmelt.
Hendershot, W.H., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.58-68, 17 refs.
Dufresne, A., Lalande, H., Wright, R.K.
Meltwater, Water chemistry, Snowmelt, Soil water, Precipitation (meteorology), Water flow, Stream flow, Drainage, Watersheds.

41-1486
Integrated model of snowmelt quality for boreal forest sites.
Roberge, J., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.69-83, 6 refs.
Jones, H.G., Stein, J., Sochanska, W.
Snowmelt, Forest land, Water chemistry, Runoff, Meltwater, Models, Drainage, Air temperature, Precipitation (meteorology).

41-1487
Some physical properties of snowcover on evolving first year sea ice.
Crocker, G.B., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.84-95, 12 refs.
Lewis, J.E.
Snow physics, Snow cover effect, Snow ice interface, Sea ice, Snow density, Snow composition, Snow temperature, Brines, Thermal regime.

41-1488
Hudson River ice management.
Ferrick, M.G., et al, MP 2174, Eastern Snow Conference, 42nd, 1985, [1985], p.96-110, 7 refs.
Lemieux, G., Gatto, L., Mulherin, N.
Ice jams, Ice breakup, River ice, Ice conditions, Ice dams, Ice cover effect, River flow, Ice cover thickness, Flooding, Countermeasures, Water waves.
An ice management strategy is being developed for a reach of the Hudson River that experienced ice jam flooding during the 1983-84 winter. Preliminary field studies have focused on developing a technique to induce the breakup of an ice cover or ice jam by releasing water from an upstream dam. During these studies, a series of abrupt releases generated long-period river waves of different magnitudes, durations and spacings that caused changes in river level, flow velocity, and integrity of the ice cover. By monitoring the river elevation and ice cover at several locations, we have found that each of these wave parameters affected the response of the ice cover. The steepness of the wave front depends upon the initial river stage and the amplitude of the release, and is an important parameter affecting the stability of the ice cover. The sequence of events leading to breakup of the relatively thin ice cover on the Hudson was identical to that reported for other rivers having different physical characteristics and much thicker ice. These studies have revealed that pulsed releases of a practical magnitude were effective in removing the ice cover from the reach and provided basic data for analyis of river ice cover breakup.

41-1489
Recommendations for site-specific observations of river ice.
Prowse, T.D., Eastern Snow Conference, 42nd, 1985, [1985], p.111-125, 22 refs.
River ice, Freezeup, Ice breakup, Ice jams, River flow, Ice formation, Models.

41-1490
Snow accumulation and snowmelt runoff in a suburban environment.
Buttle, J.M., Eastern Snow Conference, 42nd, 1985, [1985], p.126-138, 25 refs.
Snow accumulation, Snowmelt, Runoff, Diurnal variations, Flooding. Rain, Seasonal variations.

41-1491
Snowmelt simulation of short living snowpacks.
Bauwens, W., Eastern Snow Conference, 42nd, 1985, [1985], p.139-155, 20 refs.
Snowmelt, Flood forecasting, Heat transfer, Snow cover, Models, Climatic factors, Ra[illegible].

41-1492
Analysis of snow loads due to drifting on multilevel roofs.
Speck, R.S., Jr., Eastern Snow Conference, 42nd, 1985, [1985], p.157-170, 10 refs.
Snow loads, Roofs, Snowdrifts, Snow density, Blowing snow.

41-1493
Collection of aerosol particles by snow crystals.
Wang, P.K., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.171-176, 9 refs.
Sauter, D.
Snow composition, Aerosols, Snow crystals, Diffusion, Precipitation (meteorology), Models, Analysis (mathematics).

41-1494
Constitutional supercooling in natural ice.
Jones, R.E., Eastern Snow Conference, 42nd, 1985, [1985], p.188-196, 15 refs.
Ice crystal growth, Thermal regime, Sea ice, Supercooling, Temperature gradients, Water temperature, Water chemistry, Ice crystal structure.

41-1495
Icing studies on Mt. Washington: an historical perspective.
Rancourt, K.L., Eastern Snow Conference, 42nd, 1985, [1985], p.197-204, 8 refs.
Icing, Weather stations, Snowfall, Ice accretion, Precipitation (meteorology), Equipment.

41-1496
Computer interfacing of meteorological sensors in a severe weather and high RFI environment.
Rancourt, K., et al, MP 2175, Eastern Snow Conference, 42nd, 1985, [1985], p.205-211, 7 refs.
Govoni, J., Oxton, A.
Meteorological instruments, Computer applications, Ice detection, Ice loads, Power line icing, Protection, Thermistors, Radio communication, Transmission lines, Wind factors.
Methods are delineated whereby the outputs of ten different sensors used in a study of wind and ice loading on a cable are protected from Radio Frequency Interference (RFI) and severe weather, and processed for logging on a computer. Twelve separate signals from two types of ice detector, two types of cable load cell (including one tri-alial load cell), a pitot-static anemometer, a wind vane and a thermistor are introduced into a Digital Equipment Corporation MINC-11/23 computer. Four of these signals, which would otherwise be incompatible, are conditioned for acceptance by the computer. The signals represent high-speed, consecutive samplings of rapidly changing parameters at a sampling frequency controlled by an operator. Sampled data are logged on a printout and are transferred to magnetic tape for off-site analyses. These methods operate successfully on the summit of Mount Washington, a location known for its harsh weather, in an environment with poor electrical ground and relatively high radio and television frequency interference.

41-1497
Meteorological and snow cover measurements at Grayling, Michigan.
Bates, R.E., et al, MP 2176, Eastern Snow Conference, 42nd, 1985, [1985], p.212-229, 5 refs.
O'Brien, H.W.
Electronic equipment, Snow cover effect, Snowfall, Snow physics, Snow depth.
U.S. Army Cold Regions Research and Engineering Laboratory is currently conducting research programs directed toward determining potential effects of airborne snow, snow cover and various meteorological parameters on electromagnetic systems. These programs required extensive-meteorological and snow cover characterization during the winter of 1982-83 and 1983-84 at Camp Grayling, Michigan, which are summarized in this report. The paper also gives a description and discusses the cold weather accuracy and reliability of the automatic recording systems and sensors employed at the snow experiments. Descriptions are given of snow cover measurement techniques, sensors utilized and their accuracy for providing the physical properties of snow cover backgrounds.

41-1498
Correction of winter precipitation values following a change of gauge exposure.
Palmer, D.C., Eastern Snow Conference, 42nd, 1985, [1985], p.230-236, 9 refs.
Precipitation gages, Snowfall, Snow accumulation, Climatic factors, Accuracy, Wind factors, Seasonal variations, Winter.

41-1499
Surveillance of year-round shipping routes in the Canadian Arctic: a challenge to the remote sensing community.
Dey, B., Eastern Snow Conference, 42nd, 1985, [1985], p.237-242, 10 refs.
Ice navigation, Ice conditions, Icebreakers, Remote sensing, Northwest Passage, Sea ice, Microwaves, Weather observations.

41-1500
Chemical migration in mid latitude snow pack.
Hogan, A.W., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.243-254, 8 refs.
Snow composition, Chemical analysis, Snow cover, Snow stratigraphy, Snowfall, Ions, Migration.

41-1501
Abnormally enriched elemental concentrations in urban snow.
Drake, J.J., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.255-261, 18 refs.
Vermette, S.J., Landsberger, S., Simsons, A.
Snow composition, Chemical analysis, Spectroscopy, Aerosols, Pollution, Environmental impact.

41-1502
Effects of varying snowpack and watershed conditions on snowmelt runoff response.
McDonnell, J.J., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.262-[illegible]66, 8 refs.
Taylor, C.H.
Runoff forecasting, Snowmelt, Snow cover effect, Watersheds, Stream flow.

41-1503
Snowpack depletion in a forested catchment.
Buttle, J.M., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.267-271, 7 refs.
McDonnell, J.J.
Snowmelt, Forest land, Runoff forecasting, Heat transfer, Water retention, Snow water equivalent, Snow accumulation, Drainage, Models, Snow cover distribution, Remote sensing.

41-1504
Hydrothermal decay of ice jams.
Prowse, T.D., et al, Eastern Snow Conference, 42nd, 1985, [1985], p.272-276, 13 refs.
Marsh, P.
Ice jams, Ice breakup, River ice, Ice melting, River flow, Flooding, Water level, Water temperature.

41-1505
Variations in ionic composition between High Arctic lake and land snowpack.
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Adams, P.
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41-1558
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The variability in physical, chemical and biological properties was examined for a number of glacier melt streams in south Victoria Land. Streams flowed for between one and two months. Stream water temperatures (range 0-11 C) varied over short (hr) time scales whilst discharges varied considerably between streams (range 0.001-15 cu m/s) and over diel cycles. Solar radiation and air temperature were major determinants of stream discharge. Variability in discharge was reflected in variability in nutrient chemistry and sediment load. Nitrogen and phosphorus varied considerably between streams; the meltwaters early in summer contained 10-20 times higher levels of dissolved N and P than later in the season. Within stream nutrient levels were modified by dense algal growths and penguin rookeries. Epilithic algal communities were made up predominantly of cyanophyceae which formed mats and crusts. Longitudinal and horizontal variability of species in the communities in selected streams is described. Analyses of algal cover and biomass (chlorophyll *a*) show that substrate type and flow rates are of greater importance than nutrients in influencing algal abundance and biomass. (Auth.)

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41-1564
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41-1565
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41-1566
Canadian Beaufort Sea 1984 repetitive mapping of ice scour.
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41-1568
Nodal domain integration model of two-dimensional heat and soil-water flow coupled by soil-water phase change.
Hromadka, T.V., II, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1987, SR 87-09, 124p., ADA-183 518, Refs. passim.
Frozen ground thermodynamics, Soil water migration, Heat transfer, Freeze thaw cycles, Heat flux, Phase transformations, Mathematical models, Computer applications, Temperature effects, Snow cover effect.
A model of phase change in freezing and thawing soils is developed for cold regions engineering problems which require two-dimensional analysis of the thermal regime of soils. These problems include complex boundary conditions such as atmosphere/ground surface thermal interaction and snowpack insulation. Other concerns include complex soil conditions such as the presence of a peaty muskeg or tundra-like soil which may provide thermal insulation for underlying ice-rich mineral soil. Although several models have been developed to predict temperatures in freezing and thawing soils, often the key question is simply whether or not the soil is frozen, since soil structural properties are significantly influenced by the soil-water state of phase. In this report, a simple two-dimensional model is developed for use in cold regions engineering studies. A FORTRAN computer program is available which accommodates two-dimensional heat and soil-water flow models as coupled by an isothermal phase change model. The program can be used to analyze two-dimensional freezing-thawing problems which have sufficient known information to supply the necessary modeling parameters, boundary conditions, and initial conditions.

41-1569
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Steel structures, Cold weather performance, Offshore structures, Temperature effects, Tensile properties, Welding, Strength.

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Drift, Ice mechanics, Remote sensing, Ice conditions, Ice floes, Wind factors, Ocean currents, Seasonal variations, Fram Strait.

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Determining the resistance of fresh water ice to fracturing. (Opredelenie treshchinostoikosti (KIC) presnovodnogo l'da),
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41-1576
Providing controllability for an icebreaker running astern in heavy ice. (Obespechenie upravliaemosti ledokola na zadnem khodu v tiazhelyk l'dakh),
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Models, Ice navigation, Icebreakers.

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41-1578
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41-1579
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41-1581
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41-1582
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Richter-Menge, J.A., Cox, G.F.N.
Ice creep, Rheology, Sea ice, Microstructure, Ice strength, Stress strain diagrams, Compressive properties, Porosity, Grain size, Pressure ridges, Ice crystal structure.
The rheological properties of columnar multi-year ridge ice tested under uniaxial compression at -5C and -20C are analyzed in terms of the material microstructure. Microstructural parameters considered included porosity and grain size. Strain rates were varied from 1/100,000/sec to 1/100 sec. A single integral representation was used to model the uniaxial material constitutive equation. Results show a definite effect of porosity and strain rate on the mechanical behavior. However, grain size was not found to significantly affect properties, probably because the grain sizes tested for columnar sea ice were all quite large (d=10 to 40 mm). The rheological properties also showed some nonlinearities which have not been observed in nonsaline ice. Finally, a viscoplastic representation is recommended as a formulation which might be better suited for characterizing the properties of sea ice.

41-1583
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41-1584
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41-1585
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Ice mechanics, Sea ice, Ice cracks, Ice deformation, Microstructure, Temperature effects, Theories, Loads (forces), Ice creep, Damage, Strain tests.

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Ice models, Sea ice, Ice mechanics, Loads (forces), Drift, Icebergs.

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Ice cover effect, Wind velocity, Water waves, Loads (forces), Wind direction, Wind pressure, Analysis (mathematics).

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41-1589
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Bakalchuk, V.
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41-1590
Sea ice modelling in the East Greenland area.
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Lu, Q.-M., Sea ice modelling in the East Greenland area.
Ice models, Sea ice distribution, Ice edge, Ocean currents, Thermodynamics, Greenland.

41-1591
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Chellis, S.E.
Pressure ridges, Sea ice, Ice models, Ice conditions, Ice bottom surface, Classifications, Statistical analysis.

41-1592
High speed borehole pressuremeter to measure the crushing strength of ice.
Michel, B., et al, International Conference on Ice Technology, 1st, Cambridge, MA, June 1986. Proceedings, Berlin, Springer, 1986, p.187-208, 6 refs.
Hodgson, T.P.
Ice strength, Ice loads, Stresses, Ice pressure, Boreholes, Measuring instruments, Analysis (mathematics), Design, Ice temperature.

41-1593
Sea ice testing in flexure—the importance of shear deformations.
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Degrange, G.
Ice strength, Ice deformation, Shear properties, Bearing strength, Loads (forces), Sea ice, Anisotropy, Design criteria, Flexural strength.

41-1594
Design, development and deployment of instrument packages to monitor the motion of glacial ice masses at sea.
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Klein, K., Diemand, D.
Glacier flow, Offshore structures, Glaciers, Sea water, Damage, Design, Monitors, Labrador Sea.

41-1595
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Saeki, H., et al, International Conference on Ice Technology, 1st, Cambridge, MA, June 1986. Proceedings, Berlin, Springer, 1986, p.237-246, 4 refs.
Takeuchi, T., Sakai, M., Suenaga, E.
Ice pressure, Offshore structures, Sea ice, Pressure, Ice volumes, Caissons, Artificial islands, Tests.

41-1596
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Ice strength, Sea ice, Temperature effects, Ice surface, Ice temperature, Flexural strength, Compressive properties, Measurement.

41-1597
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Sayed, M., et al, International Conference on Ice Technology, 1st, Cambridge, MA, June 1986. Proceedings, Berlin, Springer, 1986, p.255-262, 6 refs.
Frederking, R.M.W., Croasdale, K.R.
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41-1598
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Gregoire, G.B., et al, International Conference on Ice Technology, 1st, Cambridge, MA, June 1986. Proceedings, Berlin, Springer, 1986, p.263-285, 9 refs.
Zilberberg, Y.M.
Heat transfer, Ice thermal properties, Brines, Ice temperature, Temperature distribution, Floors, Forecasting, Pipelines, Computer applications, Models.

41-1599
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Shulson, E.M.
Ice cracks, Fracturing, Ice strength, Loads (forces), Ice crystal structure, Grain size, Temperature effects.

41-1600
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Ice loads, Offshore structures, Fracturing, Ice cracks, Ice pressure, Design, Foundations, Ice mechanics, Ice temperature, Models.

41-1601
Ice-breaking ships and operational loads.
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41-1602
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Ice navigation, Ice conditions, Ships, Models, Tests, Ice solid interface.

41-1603
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41-1604
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41-1605
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41-1606
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Wang, L.
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41-1607
Time and temperature effects in the performance of drilling ice platforms.
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41-1608
Viscoelastic approach to the ice load evaluation.
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Ice loads, Viscoelasticity, Offshore structures, Ice creep, Rheology, Ice solid interface, Strains, Analysis (mathematics).

41-1609
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41-1610
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41-1611
Development of an ice piloting handbook.
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41-1612
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Ice navigation, Ice conditions, Marine transportation, Remote sensing, Airborne radar.

41-1613
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41-1614
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41-1615
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41-1616
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Ice navigation, Marine transportation, Ships, Icebreakers, Design.

41-1617
Progress in developing new design guidelines for ice transiting ships.
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41-1618
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41-1619
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Ice navigation, Tanker ships, Marine transportation, Ice breaking, Icebreakers, Air cushion vehicles, Models, Tests.

41-1620
Generation and trajectories of ice islands and multiyear ice flows.
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Ice islands, Ice mechanics, Floating ice, Icebergs, Grounded ice, Drift stations.

41-1621
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Freezing, Polymers, Rubber, Glass, Diffusion, Liquid crystals.

41-1622
Using stress transducers in predicting frost resistance of concrete. [Ispol'zovanie datchikov napriazheniĭ dlia prognozirovaniia morozostoĭkosti betona],
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Concrete structures, Concrete strength, Frost resistance, Freeze thaw cycles.

41-1623
Dynamic loads of high density mudflow mass on transverse structures. [Dinamicheskie nagruzki selevoĭ massy vysokoĭ plotnosti na poperechnye sooruzheniia],
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Slope processes, Impact strength, Mudflows, Dynamic loads, Design.

41-1624
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Alpine landscapes, Snow cover distribution, Runoff, Snow water equivalent, Meteorological data, Statistical analysis.

41-1625
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Hydraulic structures, Slope processes, Mudflows, Protection.

41-1626
Results of laboratory investigations of newly designed mudflow control structures of semi-cylindrical form. [Rezul'taty laboratornykh issledovaniĭ novogo protivoselevogo sooruzheniia formy polutsilindra],
Gavardashvili, G.V., *Akademiia nauk Gruzinskoĭ SSR. Soobshcheniia*, Jan. 1986, 121(1), p.169-171, In Russian with English and Georgian summaries. 3 refs.
Slope processes, Hydraulic structures, Mudflows, Design, Protection.

41-1627
Self-similar solution of multidimensional Stefan problem. [Avtomodel'noe reshenie mnogomernoĭ zadachi Stefana],
Shmarev, S.I., *Akademiia nauk SSSR. Doklady*, May-June 1986, Vol.288, p.95-99, In Russian. 7 refs.
Stefan problem, Phase transformations, Interfaces.

41-1628
Anomalous streamer discharge in air with supercooled steam and its luminescence. [Anomal'nyĭ strimernyĭ razriad v vozdukhe s pereokhlazhdennymi vodianymi parami i ego svechenie],
Voĭtsekhovskiĭ, M.B., *Akademiia nauk SSSR. Doklady*, 1986, 288(2), p.351-354, In Russian. 14 refs.
Water vapor, Supercooling, Corona discharge, Luminescence, Experimentation, Fog, Aerosols.

41-1629
Patterns of carbon assimilation in a microalgal community from annual sea ice, East Antarctica.
McConville, M.J., et al, *Polar biology*, 1985, 4(3), p.135-141, Refs. p.141.
Mitchell, C., Wetherbee, R.
Sea ice, Microbiology, Photosynthesis, Ice cover effect, Algae.
Patterns of carbon assimilation into photosynthetic end products were measured in annual sea ice near the Davis and Mawson stations during Dec. 1982, following the peak of the spring ice algal bloom. Rates of C-14 assimilation in the ice communities were measured with an *in situ* sampler-incubation chamber. The partitioning of C-14 bicarbonate into four subcellular fractions, and the efficacy of extraction, was determined. High C-14 incorporation into MeOH/H2O- and TCA-soluble fractions occurred during *in situ* incubation and also over a 24 h *in vitro* incubation, although incorporation into protein, at the expense of the other fractions, continued during the night. While primary productivity in the ice communities was still appreciable during Dec., the prominent synthesis of reserve glucan and the decreasing cellular ratios of protein/carbohydrate suggests that the ice algae may be nutrient limited during this period. (Auth. mod.)

41-1630
Lead concentration changes in antarctic ice during the Wisconsin/Holocene transition.
Boutron, C.F., et al, *Nature*, Sep. 18, 1986, 323(6085), p.222-225, 41 refs. A corrigendum appears in Nature 326(6113): 626, Apr. 9, 1987.
Patterson, C.C.
Ice cores, Ice composition, Impurities, Antarctica—Wilkes Land.
In order to assess current global lead atmospheric pollution, it is necessary to reconstruct the natural, pre-human atmospheric fluxes of this toxic heavy metal. The time variations of these fluxes over the past 27,000 years have been obtained from the analysis of an antarctic ice core. Lead levels are found to have been high during the late Wisconsin and very low during the Holocene. Lead levels from dust, from volcanoes and from sea spray, respectively, are also assessed.

41-1631
Ice core record of the C-13/C-12 ratio of atmospheric CO2 in the past two centuries.
Friedli, H., et al, *Nature*, Nov. 20, 1986, 324(6094), p.237-238, 18 refs.
Ice cores, Radioactive isotopes, Carbon dioxide, Atmospheric composition, Antarctica—Siple Station.
The release of carbon into the atmosphere due to the activities of humans has caused an increase in concentration as well as a change in the isotopic composition of atmospheric carbon dioxide. CO2 derived from fossil fuel combustion and from biomass destruction have *delta*C-13 values of -25 per mill (compared to the atmospheric value of -7 per mill) and are thus depleted in C-13. *Delta*C-13 of CO2 separated from air trapped in bubbles in ice samples from an ice core taken at Siple Station in Antarctica, was measured. It has been possible to demonstrate the atmospheric increase of CO2 and methane with high time resolution. The isotopic results, together with the CO2 record from the same ice core, yield information on the sources of excess carbon dioxide and provide a data base for testing the consistency of global carbon cycle models. (Auth.)

41-1632
Soviet glaciological studies in 1985. [Sovetskie gliatsiologicheskie issledovaniia v 1985 godu],
Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Apr. 1986, No.56, p.3-10, In Russian.
Gnedovskaia, M.IU.
Mountain glaciers, Avalanche engineering, Snow physics, Alpine glaciation, Rock glaciers, River ice, Lake ice, Paleoecology, Paleoclimatology, Antarctica.

41-1633
Soviet glaciological studies on the eastern ice field in 1984-1985. [Sovetskie gliatsiologicheskie issledovaniia na vostochnom ledianom pole v 1984-1985 gg.], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Apr. 1986, No.56, p.10-16, 15 refs., In Russian with English summary.
Sounding, Airborne equipment, Radar echoes, Ice drills, Seismic surveys, Ice cover thickness, Drill core analysis, Norway—Svalbard.

41-1634
Theory of radiative-conductive mechanism of subsurface heating and melting of snow and ice. [Teoriia radiatsionno-konduktivnogo mekhanizma podpoverkhnostnogo nagreva i plavleniia snega i l'da],
Krass, M.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Apr. 1986, No.56, p.27-38, 16 refs., In Russian with English summary.
Merzlikin, V.G.
Heating, Mathematical models, Snow physics, Ice physics, Optical properties, Subsurface investigations, Thawing.

41-1635
Model of Pleistocene glaciation of the system "glaciers-ocean-troposphere-asthenosphere". [Model' pleĭstotsenovykh oledeneniĭ sistemy "ledniki-okean-troposfera-astenosfera"],
Karachenov, A.T., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Apr. 1986, No.56, p.38-45, 18 refs., In Russian with English summary.
Glaciation, Mathematical models, Glaciers, Oceans, Paleoclimatology, Pleistocene.
A new model of Pleistocene glaciations is advanced. The following features have been introduced: equation for the mean altitude of the glacier surface has been obtained; a quasi-stationary condition has been applied to the "transport" model of a non-stationary glacier and the formula was introduced for complete ablation, caused by ice flow; on the basis of the linearized empirical formula by V.G. Khodakov a new relationship was introduced for the thermal component of ablation field, which depends on the number of glaciers as the main function of their area; a new relationship for the number of glaciers has been advanced as a smoothed function of their area. Computerized modelling shows that the new model describes more adequately the evolution of Pleistocene glaciations. (Auth. mod.)

41-1636
Mathematical model and forecasts of thermokarst evolution. [Matematicheskaia model' i prognoz evoliutsii termokarsta],
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41-1643
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41-1700
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Gillet, P., Poirier, J.P.
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Sorg, N.
Ice fog, Particles, Ice spectroscopy, Ice sublimation, Infrared spectroscopy, Grain size.

41-1703
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Clark, R.N.
Ice optics, Ice spectroscopy, Remote sensing, Impurities, Grain size, Absorption, Reflectivity.

41-1704
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Extraterrestrial ice, Ice spectroscopy, Planetary environments, Ice optics, Temperature effects.

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D'Hendecourt, L.B.
Extraterrestrial ice, Grain size, Planetary environments, Clouds (meteorology), Chemical analysis.

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Calcagno, L., Foti, G., Sheng, K.L.
Extraterrestrial ice, Ions, Planetary environments, Cosmic dust, Grain size, Experimentation, Infrared spectroscopy, Erosion.

41-1708
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Herman, G., Rappaport, M.L., Mekler, Y.
Extraterrestrial ice, Planetary environments, Ions, Scattering, Temperature effects, Experimentation.

41-1709
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Extraterrestrial ice, Planetary environments, Ions, Reflectivity, Particles, Chemical analysis, Light scattering.

41-1710
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Extraterrestrial ice, Ions, Radiation, Spectra, Planetary environments, Erosion, Temperature effects, Chemical composition.

41-1711
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Extraterrestrial ice, Planetary environments, Comets, Chemical composition, Temperature effects, Models.

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Extraterrestrial ice, Snow evaporation, Ice sublimation, Planetary environments, Comets, Water vapor, Latent heat, Vapor pressure, Phase transformations.

41-1713
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Extraterrestrial ice, Condensation, Ice growth, Comets, Ice formation, Planetary environments, Chemical composition.

41-1714
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Extraterrestrial ice, Ice crystal structure, Porosity, Phase transformations, Comets, Temperature gradients, Thermal conductivity, Heat transfer.

41-1715
Composition and structure of the comet nucleus and its evolution on a periodic orbit.
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Extraterrestrial ice, Ice models, Ice structure, Comets, Temperature effects, Chemical composition.

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Froeschlé, C., Klinger, J.
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41-1717
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Emerich, C.
Extraterrestrial ice, Ice models, Remote sensing, Comets, Grain size, Albedo, Models.

41-1718
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Extraterrestrial ice, Ice physics, Spectra, Comets, Reflection, Chemical composition.

41-1719
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Feldman, P.D.
Extraterrestrial ice, Planetary environments, Comets, Origin, Chemical composition.

41-1720
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Extraterrestrial ice, Cosmic dust, Ice sublimation, Comets, Temperature effects.

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Extraterrestrial ice, Ice composition, Ice crystal structure, Comets.

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Masson, P.L., *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.521-534, 25 refs.
Extraterrestrial ice, Mars (planet), Chemical composition, Impurities, Cosmic dust, Erosion, Atmospheric composition.

41-1723
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Salvail, J.R., Zent, A.P., Postawko, S.E.
Extraterrestrial ice, Mars (planet), Ground ice, Patterned ground, Temperature variations, Wind erosion, Models, Thermal regime, Albedo.

41-1724
Subsurface ice and permafrost on Mars.
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Permafrost distribution, Mars (planet), Ground ice, Extraterrestrial ice, Ice creep, Permafrost physics, Unfrozen water content, Subsurface investigations.

41-1725
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Ground ice, Mars (planet), Geomorphology, Permafrost, Remote sensing, Soil water, Planetary environments, Thermokarst, Patterned ground.

41-1726
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Extraterrestrial ice, Mars (planet), Permafrost, Subglacial drainage, Unfrozen water content, Geomorphology.

41-1727
Icy satellites, rings and Pluto.
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Hydrates, Extraterrestrial ice, Clathrates, Planetary environments, Geologic processes, Liquid phases, High pressure ice.

41-1728
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Ahrens, T.J., et al, *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.631-654, 41 refs.
O'Keefe, J.D.
Extraterrestrial ice, Planetary environments, Ice melting, Water content, Thermodynamics, Pressure, Ice sublimation, Temperature effects, Shock waves, Analysis (mathematics).

41-1729
Composition and structure of planetary rings.
Burns, J.A., *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.655-679, 60 refs.
Extraterrestrial ice, Planetary environments, Ice composition, Chemical analysis, Albedo.

41-1730
Ices in planetary rings.
Smoluchowski, R., *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.681-689, 27 refs.
Extraterrestrial ice, Planetary environments, Mass transfer, Infrared spectroscopy, Chemical composition, Ice structure.

41-1731
Small, icy satellites of Saturn.
Cruikshank, D.P., *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.691-697, 17 refs.
Extraterrestrial ice, Planetary environments, Remote sensing, Albedo, Infrared spectroscopy, Photometry.

41-1732
Shapes and strengths of small icy satellites.
Farinella, P., et al, *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.699-710, 21 refs.
Extraterrestrial ice, Planetary environments, Ice strength, Ice physics, Temperature effects.

41-1733
Icy satellites of Uranus.
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Extraterrestrial ice, Planetary environments, Albedo, Infrared spectroscopy, Surface properties, Density (mass/volume).

41-1734
Atmospheres of icy bodies.
Owen, T., *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.731-740, 25 refs.
Extraterrestrial ice, Planetary environments, Atmospheric composition, Clathrates, Hydrates.

41-1735
Evolution of Titan's coupled ocean-atmosphere system and interaction of ocean with bedrock.
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Stevenson, D.J.
Hydrates, Extraterrestrial ice, Planetary environments, Hydrocarbons, Chemical composition, Atmospheric composition.

41-1736
Importance of the tectonic motions on Ganymede.
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Thomas, P.G., Masson, P.L.
Extraterrestrial ice, Planetary environments, Surface properties, Tectonics.

41-1737
Some remarks on the geology of Ganymede.
Bianchi, R., et al, *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No 156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.767-779, 12 refs.
Casacchia, R.
Extraterrestrial ice, Planetary environments, Geomorphology, Tectonics, Geological maps.

41-1738
Tectonics of Valhalla basin on Callisto.
Thomas, P.G., et al, *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.781-790, 8 refs.
Masson, P.L.
Extraterrestrial ice, Planetary environments, Tectonics, Surface properties.

41-1739
Sulfur dioxide ice on Io.
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Howell, R.R., Geballe, T.R., Fanale, F.P.
Extraterrestrial ice, Planetary environments, Ice composition, Frost, Infrared spectroscopy, Chemical composition.

41-1740
Methane ice on Triton and Pluto.
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Brown, R.H., Clark, R.N.
Extraterrestrial ice, Planetary environments, Ice composition, Infrared spectroscopy.

41-1741
Geology of icy satellites.
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Extraterrestrial ice, Geology, Planetary environments.

41-1742
Summary of the highlights of the conference.
Smoluchowski, R., *North Atlantic Treaty Organization. Advanced Science Institutes Series. Series C: Mathematical and Physical Sciences*, 1985, No.156, NATO Advanced Research Workshop on Ices in the Solar System, Nice, France, Jan. 16-19, 1984. Proceedings. Edited by J. Klinger, D. Benest, A. Dollfus and R. Smoluchowski, p.859-864.
Clathrates, Extraterrestrial ice, Hydrates, Planetary environments, Phase transformations, Ice melting, Ice crystal structure, Microwaves.

41-1743
Progress in pedology. Contributions of Soviet pedologists to the 13th International Congress of Pedologists, Hamburg, 1986. [Uspekhi pochvovedeniia. Sovetskie pochvovedy k XIII Mezhdunarodnomu kongressu pochvovedov, Gamburg, 1986],
Kovda, V.A., ed, Moscow, Nauka, 1986, 270p., In Russian. For selected papers see 41-1744 and 41-1745. Refs. passim.
Glazovskaia, M.A., ed.
Cryogenic soils, Soil temperature, Temperature distribution, Heat transfer, Periodic variations, Active layer, Snow cover effect, Vegetation factors.

41-1744
Temperature field and annual heat cycles in soils. [Temperaturnoe pole i godovye teplooboroty v pochvakh],
Makeev, O.V., et al, Uspekhi pochvovedeniia Sovetskie pochvovedy k XIII Mezhdunarodnomu kongressu pochvovedov, Gamburg, 1986 (Progress in pedology. Contributions of Soviet pedologists to the 13th International Congress of Pedologists, Hamburg, 1986) edited by V.A. Kovda and M.A. Glazovskaia, Moscow, Nauka, 1986, p.27-31, In Russian. 6 refs.
Ostroumov, V.E.
Cryogenic soils, Soil temperature, Phase transformations, Soil air interface, Heat transfer, Snow cover effect, Temperature distribution, Active layer, Vegetation factors.

41-1745
Salt transfer processes in cryogenic soils. [Protsessy soleperenosa v kriogennykh pochvakh],
Panin, P.S., et al, Uspekhi pochvovedeniia. Sovetskie pochvovedy k XIII Mezhdunarodnomu kongressu pochvovedov, Gamburg, 1986 (Progress in pedology. Contributions of Soviet pedologists to the 13th International Congress of Pedologists, Hamburg, 1986) edited by V.A. Kovda and M.A. Glazovskaia, Moscow, Nauka, 1986, p.245-250, In Russian. 13 refs.
Kazantsev, V.A.
Cryogenic soils, Salinity, Forest tundra, Taiga, Active layer, Meltwater, Runoff, Ground water, Saline soils.

41-1746
Modular construction of oil and gas industry objects. Manual. [Komplektno-blochnoe stroitel'stvo ob"ektov neftianoĭ i gazovoĭ promyshlennosti. Spravochnoe posobie],
Batalin, IU.P., ed, Moscow, Nedra, 1986, 576p., In Russian. 61 refs.
Chirskova, V.G., ed, Shmal', G.I., ed.
Manuals, Modular construction, Taiga, Industrial buildings, Paludification, Residential buildings, Foundations, Permafrost distribution, Prefabrication, Design, Snow loads, Ice loads, Transportation.

41-1747
Calculating pile foundations for hydraulic structures. [Raschet svaĭnykh osnovaniĭ gidrotekhnicheskikh sooruzheniĭ],
Levachev, S.N., et al, Moscow, Energoatomizdat, 1986, 133p., In Russian with abridged English table of contents enclosed. 63 refs.
Fedorovskiĭ, V.G., Kolesnikov, IU.M., Kurillo, S.V.
Hydraulic structures, Foundations, Concrete piles, Reinforced concretes, Pile structures, Supports, Moorings, Ice loads, Dynamic loads, Shear strain, Design.

41-1748
Sea-floor spreading in the Arctic Basin. [Glubinnaia geologiia Arkticheskogo basseĭna],
Kiselev, IU.G., Moscow, Nedra, 1986, 224p., In Russian with English table of contents enclosed. 50 refs.
Bottom topography, Geologic structures, Maps, Drift stations, Geophysical surveys, Magnetic surveys, Seismic surveys, Geothermometry, Arctic Ocean.

41-1749
Thermal performance of the building envelope. [Teplovaia zashchita ograzhdaiushchikh konstruktsiĭ zdaniĭ i sooruzheniĭ],
Tabunshchikov, IU.A., et al, Moscow, Stroĭizdat, 1986, 400p., In Russian with abridged English table of contents enclosed. 74 refs.
Khromets, D.IU., Matrosov, IU.A.
Walls, Joints (junctions), Residential buildings, Windows, Industrial buildings, Heating, Solar radiation, Ventilation, Design, Heat loss, Heat transfer.

41-1750
Long-range transport of continental radon in subantarctic and antarctic areas.
Polian, G., et al, *Tellus*, July-Sep. 1986, 38B(3-4), p.178-189, 28 refs.
Lambert, G., Ardouin, B., Jegou, A.
Air masses, Atmospheric circulation, Radioactivity.
Gaseous Rn-222, a daughter product of U-238, is injected into the atmosphere from the surface of continents. Its atmospheric cycle is particularly simple since it disappears only by radioactive decay (half-life 3.8 days). Radon measurements obtained over more than 15 years in remote stations in antarctic and subantarctic areas generally give concentrations as low as 0.1 to 2 pCi/cu m. However, it is shown that sharp increases of concentrations occur, reaching 3 to 30 pCi/cu m, called "radonic storms". Owing to the negligible degassing of radon from the sea surface, such peaks are accounted for by long-range transport from remote continents (mainly South Africa) over southern Indian and antarctic oceans, with transit times ranging from 4.5 to 7 days and very low dilution factors of the order of 3 to 7. This air-mass transport is related to warm sectors of cyclonic systems passing over South Africa and around the Antarctic continent. (Auth.)

41-1751
Aerosol exchange in the remote troposphere.
Hogan, A.W., *Tellus*, July-Sep. 1986, 38B(3-4), MP 2180, p.197-213, 35 refs.
Atmospheric circulation, Atmospheric composition, Aerosols.
Parameters observed and reported here are primarily ozone mixing ratios; maximum and minimum ozone amounts noted near the ITCZ; antarctic aerosol concentrations and transport. Uniform aerosol concentrations were observed in the Antarctic troposphere except in the vicinity of cirrus layers aloft, and in moist or cloudy layers near the surface. Enhanced ozone mixing ratios occurred in troughs about the periphery of Antarctica, and in slightly turbulent layers near mountains. Ozone and aerosol concentrations observed over a wide geographic area of Antarctica were stratified into two altitude classes, and the

results mapped. Ozone concentrations in the mid troposphere (550 to 400 mb levels) were small and nearly invariant over the interior of Antarctica. Ozone concentrations in the upper tropospheric (400-300 mb) layers varied greatly, and became quite large over trough zones and about the periphery of Antarctica, and in the vicinity of high mountains. Ozone exchange appears quite vigorous in the upper troposphere and frequent aerosol exchange occurs in the lower troposphere, but the stability of the middle troposphere inhibits mixing among these levels. Vertical profiles of aerosol concentration indicate an aerosol decrease of 25 particles cu cm/Km in clear air over Antarctica. Moist and/or cloudy air over and near the Ross and Weddell Seas is enhanced with aerosols relative to this dry profile. Most layers over the interior of Antarctica are also enhanced in aerosol concentration in comparison with dry antarctic air. (Auth. mod.)

41-1752

Balloon observation of aerosols in the antarctic troposphere and stratosphere.

Ito, T., et al, *Tellus*, July-Sep. 1986, 38B(3-4), p.214-222, 33 refs.

Morita, Y., Iwasaka, Y.

Aerosols, Balloons, Sounding, Stratosphere, Antarctica—Showa Station.

Balloon soundings of aerosols up to 15 km in height were carried out in 1983 at Showa Station. The vertical distribution of the concentration and size distribution of Mie particles were obtained on 3 June and on 16 October. The vertical distribution of the concentration of Aitken particles was obtained on 17 October. This paper reviews the findings obtained by these soundings and discusses their significance in aerosol processes in the antarctic atmosphere. (Auth.)

41-1753

Aerosol measurements at the South Pole.

Bodhaine, B.A., et al, *Tellus*, July-Sep. 1986, 38B(3-4), p.223-235, 34 refs.

Aerosols, Atmospheric composition, Seasonal variations, Atmospheric circulation, Antarctica—Amundsen-Scott Station.

NOAA operates an atmospheric monitoring observatory at Amundsen-Scott Station, South Pole, where long-term measurements of carbon dioxide, ozone, aerosols, and other background pollutants are obtained to understand their possible effects on the earth's climate. The aerosol measurement program consists of the continuous measurement of condensation nuclei (CN) concentration and aerosol scattering extinction coefficient. A nearly continuous record of South Pole CN measurements from 1974 to the present, and aerosol scattering extinction coefficient measurements from 1979 to the present, has now been accumulated. The CN data show an annual cycle with a maximum exceeding 100/cu cm in the austral summer and a minimum of about 10/cu cm in the winter. Aerosol scattering extinction coefficient data show an annual cycle markedly different from that of CN with a maximum in late winter, a secondary maximum in summer, and a minimum in May. Angstrom exponents calculated from the multiwavelength aerosol scattering extinction coefficient data show a strong annual cycle suggesting larger particles in the winter than in the summer. (Auth.)

41-1754

Relative contributions of tropospheric and stratospheric sources to nitrate in antarctic snow.

Legrand, M.R., et al, *Tellus*, July-Sep. 1986, 38B(3-4), p.236-249, 46 refs.

Delmas, R.J.

Atmospheric composition, Ice sheets, Snow composition.

On the basis of some 500 firn samples from a number of antarctic sites it is shown that nitrate is deposited as gaseous HNO_3 and that tropospheric sources dominate in Antarctica. Continental and anthropogenic nitrates are not significant contributors. It is suggested that lightning at tropical and/or mid latitudes is the most likely source of antarctic nitrate. The formation of HNO_3 (or its precursors) in the stratosphere is discussed and the possible evidence for this contribution in several profiles is carefully investigated. The absence of a convincing correlation between solar factors and nitrate concentrations in snow confirms that past solar activity fluctuations cannot be reconstructed from polar ice cores. The spatial and temporal variations observed in this study are, however, not fully explained. Finally, emphasis is placed on the necessity of undertaking HNO_3 measurements in the antarctic atmosphere in order to elucidate the deposition mechanism of this major component of atmospheric chemistry. (Auth.)

41-1755

Investigation by analytical transmission electron microscopy of individual insoluble microparticles from antarctic (Dome C) ice core samples.

Gaudichet, A., et al, *Tellus*, July-Sep. 1986, 38B(3-4), p.250-261, 47 refs.

Petit, J.R., Lefèvre, R., Lorius, C.

Ice cores, Electron microscopy, Microanalysis, Particles, Eolian soils, Antarctica—Wilkes Land.

The aim of the study was to identify the mineralogy of dust and investigate the geographic location of sources and their variations with time. It is confirmed that microparticles have mostly a terrigenous (eolian) origin as revealed by identification of various clays (mostly smectites), quartz and feldspars in 6 ice samples. Except for some products attributed to volcanic activity, the mineralogy of particles appears to be randomly mixed and shows no significant change nor particular signature of a specific source over the studied period. However, kaolinite, considered to be a tracer of low latitude dust source areas, was too low in content to suggest that the tropical area was a main source of Dome C dust over the period studied. (Auth.)

41-1756

Long-term record of H2O2 in polar ice cores.

Neftel, A., et al, *Tellus*, July-Sep. 1986, 38B(3-4), p.262-270, 32 refs.

Jacob, P., Klockow, D.

Ice cores, Ice composition, Precipitation (meteorology), Ice dating, Antarctica—Byrd Station, Greenland.

At Dye 3 and Camp Century, Greenland, and at Byrd Station ice cores were drilled to bedrock. They offer an archive of solid precipitation over the last 50,000 to 100,000 years. H_2O_2 is one of the dominant trace components in the ice. A survey of the H_2O_2 levels in the three deep cores is presented. In the Greenland ice cores the H_2O_2 level decreases with increasing depth and is extremely low during the last glaciation. In the Byrd core an H_2O_2 concentration spike is observed in the time period 6000 to 12,000 years before present. Possible explanations for the decreasing trend with age and depth and the drop during the Ice Age are discussed. (Auth.)

41-1757

Deicing/anti-icing fluid—runways and taxiways. *Society of Automotive Engineers. Aerospace material specification*, Jan. 1, 1986, SAE AMS 1426A, 8p., Revision of SAE AMS 1426, Apr. 15, 1980.

Chemical ice prevention, Runways, Road icing, Ice removal, Hoarfrost, Countermeasures.

41-1758

Measurement of sea and ice backscatter reflectivity using an OTH radar system.

Ring, W.F., et al, *U.S. Air Force. Rome Air Development Center. Hanscom Air Force Base, Massachusetts. In-house report*, Mar. 1982, RADC-TR-82-63, 15p., ADA-115 225, 8 refs.

Sales, G.S.

Sea ice, Sea water, Radar, Reflectivity, Backscattering, Remote sensing, Detection.

41-1759

Urea compound, shotted. *Society of Automotive Engineers. Aerospace material specification*, Jan. 1, 1986, SAE AMS 1730A, 7p., Revision of SAE AMS 1730, Oct. 15, 1979.

Urea, Chemical ice prevention, Airports, Road icing, Corrosion, Countermeasures.

41-1760

Urea compound, powder. *Society of Automotive Engineers. Aerospace material specification*, Jan. 1, 1986, SAE AMS 1731A, 7p., Revision of SAE AMS 1731, Oct. 15, 1979

Urea, Road icing, Chemical ice prevention, Airports, Runways, Sands, Corrosion, Countermeasures.

41-1761

Ramp de-icing.

SAE Committee AGE-2, Civil Aircraft Ground Support Equipment, *Society of Automotive Engineers. Aerospace information report*, Jan. 1975, AIR 1335, 16p., 2 refs.

Icing, Ice prevention, Snow removal, Ice removal, Precipitation (meteorology), Snowfall, Rain, Freezing, Meteorological factors.

41-1762

Anti-icing and deicing-defrosting fluids. *U.S. Naval Air Engineering Center. Military specification*, Oct. 26, 1985, MIL-A-8243D, 13p., Supersedes MIL-A-8243C, Nov. 17, 1980.

Ice prevention, Defrosting, Aircraft icing, Countermeasures.

41-1763

Active and passive remote sensing of ice. Semi-annual report (1 Feb 84-31 July 84).

Kong, J.A., Cambridge, Massachusetts Institute of Technology, Research Laboratory of Electronics, Sep. 1984, 14p. + figs., ADA-154 406, 16 refs.

Ice conditions, Remote sensing, Microwaves, Reflectivity, Scattering, Sea ice, Permafrost, Vegetation.

41-1764

Underground ice in permafrost, Mackenzie Delta-Tuktoyaktuk Peninsula, N.W.T.

Gell, W.A., Vancouver, Canada, University of British Columbia, Mar. 1976, 260p., Canadian theses on microfiche no. 28687, Ph.D. thesis. Refs. p.251-258.

Permafrost thermal properties, Ground ice, Bottom sediment, Lake ice, Active layer, Freeze thaw cycles, Gas inclusions, Ice crystal size, Pingos, Ice wedges.

41-1765

Device for determining frost depth and density.

Huneidi, F., *U.S. Patent Office. Patent*, Aug. 16, 1983, 4 col., USP-4,398,412, 7 refs.

Hoarfrost, Ice cover thickness, Density (mass/volume), Windows, Measuring instruments.

41-1766

Analysis of NavSat buoy position data from the southeastern Beaufort Sea, 1980. Vol.4. Program listings.

Polar Research Laboratory, Inc., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, Mar. 1981, APOA No.154-1V4, 66p.

Ocean currents, Computer programs, Oceanography.

41-1767

Device for attachment to motor vehicle windows to prevent fogging or icing.

Schmitt, W., *U.S. Patent Office. Patent*, Aug. 16, 1983, 6 col., USP-4,399,347, 14 refs.

Ice prevention, Windows, Motor vehicles, Fog, Equipment, Design, Countermeasures.

41-1768

Carbonated ice process and product.

Hinman, D.C., et al, *U.S. Patent Office. Patent*, Aug. 16, 1983, 10 col., USP-4,398,395, 13 refs.

Zemelman, V.B., Ramakka, W.R.

Artificial ice, Ice formation, Carbon dioxide, Gas inclusions, Temperature effects, Pressure, Hydrates.

41-1769

CO2 snow-making process.

Crowe, O.F., et al, *U.S. Patent Office. Patent*, Mar. 22, 1983, 10 col., USP-4,377,402, 6 refs.

Gaber, R.E., Forbes, J.R.

Artificial snow, Carbon dioxide, Heat transfer, Pressure, Temperature effects, Gas inclusions.

41-1770

Process for preparing gasified ice of improved stability.

Kleiner, F., et al, *U.S. Patent Office. Patent*, Aug. 16, 1983, 10 col., USP-4,398,394, 15 refs.

Ramakka, W.R., Zemelman, V.B.

Artificial ice, Ice formation, Carbon dioxide, Gas inclusions, Hydrates.

41-1771

Offshore Arctic structure.

Weiss, R.T., *U.S. Patent Office. Patent*, Aug. 9, 1983, 10 col., USP-4,397,586, 17 refs.

Ice loads, Offshore structures, Ice mechanics, Floating ice, Drift, Walls, Ice cracks, Countermeasures.

41-1772

Expansion joint snowplow deflector.

Puccio, G.S., *U.S. Patent Office. Patent*, Mar. 29, 1983, 4 col., USP-4,378,176, 16 refs.

Snow removal, Road maintenance, Equipment, Winter maintenance.

41-1773

Method of selective underground mining and stabilization of rock cavities.

Hoberstorfer, G., et al, *U.S. Patent Office. Patent*, Mar. 22, 1983, 18 col., USP-4,377,353, 12 refs.

Noren, T.

Excavation, Ice (construction material), Soil stabilization, Mining, Walls, Temperature effects, Rock excavation.

41-1774

Snow thrower with dual controls.

Krug, C.C., *U.S. Patent Office. Patent*, Mar. 22, 1983, 4 col., USP-4,377,044, 8 refs.

Snow removal, Electric equipment.

41-1775

CO2 snow forming copper line.

Franklin, P.R., Jr., *U.S. Patent Office. Patent*, Mar. 15, 1983, 4 col., USP-4,376,511, 3 refs.

Artificial snow, Carbon dioxide, Pressure, Equipment.

41-1776

Method of preparing snow and ice control compositions.

Stockel, R.F., *U.S. Patent Office. Patent*, Feb. 22, 1983, 6 col., USP-4,374,743, 16 refs.

Admixtures, Artificial melting, Road maintenance, Chemical ice prevention, Snow melting, Winter maintenance, Traction, Surface properties, Trafficability.

41-1777

Ice island construction.

Cox, G.F.N., et al, *U.S. Patent Office. Patent*, Feb. 15, 1983, 8 col., USP-4,373,836, 7 refs.

Hsu, F.H.

Ice islands, Artificial islands, Offshore structures, Ice (construction material), Ice cover strength, Stresses, Ice loads.

41-1778
Investigation into the relationship between salt weathering debris production and temperature.
Davison, A.P., *Earth surface processes and landforms*, May-June 1986, 11(3), p.335-341, 20 refs.
Rocks, Brines, Erosion, Weathering, Air temperature, Deserts, Salinity, Aerosols, Frozen rocks, Experimentation.
An investigation using laboratory simulation has been made using air temperature data for Tunisia, Antarctica, and southwest England. An experiment with a 50 cycle run produced results which showed significantly greater debris production in the Antarctic and Tunisian simulations than in the southwest England simulation. Using X-ray analysis to determine salt penetration, an inverse relationship between salt penetration and debris production was seen to exist. This could be the result of evaporation in the Tunisian simulation and rapid freezing in the Antarctic simulation, concentrating salts in the upper layers of the rock samples. The authors tentatively suggests the possible existence of a parabolic relationship between salt weathering and temperature.

41-1779
Seismic measurements reveal a saturated porous layer beneath an active antarctic ice stream.
Blankenship, D.D., et al, *Nature*, July 3-9, 1986, 322(6074), p.54-57, 18 refs.
Bentley, C.R., Rooney, S.T., Alley, R.B.
Ice shelves, Ice deformation, Seismic reflection, Shear stress, Glacier flow, Porosity, Antarctica—Ross Ice Shelf.
Seismic reflection studies recently conducted on ice stream B, part of the marine ice sheet of West Antarctica, show a meters-thick layer immediately beneath the ice in which both compressional and shear wave speeds are very low. These low wave speeds imply that the material in the layer is highly porous and is saturated with water at a high pore pressure. From this, and from arguments presented in an accompanying paper to the effect that the layer would be too weak to support the shear stress exerted by the overlying ice, it is concluded that the layer is deforming and that the ice stream probably moves principally by such deformation. (Auth.)

41-1780
Deformation of till beneath ice stream B, West Antarctica.
Alley, R.B., et al, *Nature*, July 3-9, 1986, 322(6074), p.57-59, 27 refs.
Blankenship, D.D., Bentley, C.R., Rooney, S.T.
Rheology, Shear stress, Glacier flow, Seismic surveys, Antarctica—West Antarctica.
The behavior and possible instability of the West Antarctic ice sheet depend fundamentally on the dynamics of the large ice streams which drain it. Model calculations show that most ice-stream velocity arises at the bed, and radar sounding has shown the bed to be wet, but the basal boundary condition is not well understood. Seismic evidence from the Upstream B camp (UpB) on the Siple Coast of West Antarctica shows that the ice stream there rests on a layer of unconsolidated sediment averaging 5 or 6 m thick, in which the water pressure is only about 50 kPa less than the overburden pressure. Because this thin layer occurs well inland beneath an active ice sheet and rests on a surface showing flutes characteristic of glacial erosion, it is presumed that it is glacial till. It is proposed here that deformation within the till is the primary mechanism by which the ice stream moves, and implications of this hypothesis are discussed. (Auth.)

41-1781
NANA region environment, a summary of available information.
Hale, L.Z., Anchorage, University of Alaska, Arctic Environmental Information and Data Center, June 1979, 14p. + plates, 9 refs.
AEIDC, QH541 H3N3
Natural resources, Environments, United States—Alaska.

41-1782
Fate and effects of drilling fluids and cuttings discharges in lower Cook Inlet, Alaska, and on Georges Bank.
Houghton, J.P., et al, Outer Continental Shelf Environmental Assessment Program; Final reports of principal investigators, Vol.27, Anchorage, Alaska, U.S. National Oceanic and Atmospheric Administration, Ocean Assessment Division, Alaska Office, Dec. 1984, p.1-388, PB85-239 572, Refs. p.310-344.
Critchlow, K.R., Lees, D.C., Czlapinski, R.D.
Drilling fluids, Offshore drilling, Ice conditions, Waste disposal, Environmental impact, Chemical analysis, Oceanography, Marine biology.

41-1783
Conceptual oil dispersion modeling, lower Cook Inlet-Shelikof Strait.
Schleuter, R.S., et al, Outer Continental Shelf Environmental Assessment Program; Final reports of principal investigators, Vol.27, Anchorage, Alaska, U.S. National Oceanic and Atmospheric Administration, Ocean Assessment Division, Alaska Office, Dec. 1984, p.389-469, PB85-239 572, Refs. p.462-469.
Rauw, C.I.
Oil spills, Hydrodynamics, Ocean currents, Models, Wind factors, Velocity, Analysis (mathematics), United States—Alaska.

41-1784
Outer Continental Shelf Environmental Assessment Program; Final reports of principal investigators, Vol.35. Anchorage, Alaska, U.S. National Oceanic and Atmospheric Administration, Ocean Assessment Division, Alaska Office, Dec. 1985, 440p., PB86-171 758, Refs. passim. Contains 3 papers.
Ecology, Marine biology, Animals, Shores, Distribution, Environments, Birds, United States—Alaska.

41-1785
Outer Continental Shelf Environmental Assessment Program; Final reports of principal investigators, Vol.39. Anchorage, Alaska, U.S. National Oceanic and Atmospheric Administration, Ocean Assessment Division, Alaska Office, May 1986, 360p., PB86-210 978, Refs. passim. Contains 5 papers.
Meteorology, Ice mechanics, Ocean waves, Offshore structures, Icing, Sea ice, Forecasting, Superstructures, United States—Alaska.

41-1786
Geophysical fieldwork on the Ronne Ice Shelf, Antarctica.
Herrod, L.D.B., et al, *First break*, Jan. 1986, 4(1), p.9-14, 6 refs.
Garrett, S.W.
Ice shelves, Ice cover thickness, Geophysical surveys, Traverses, Geomagnetism, Logistics.
Reconstructions of Gondwanaland, the concept of a single landmass uniting all southern continents, recognize the central position of Antarctica relative to the other land fragments. Complex geological structures in the apparent overlap of South America and the Antarctic Peninsula point out the critical nature of the Ronne Ice Shelf to the understanding of the development of West Antarctica. To learn more of the nature and geophysical characteristics of the Ronne Ice Shelf, surveys are made to measure ice thickness, gravity, geomagnetism, seismicity, geodesy, and other physical parameters. These measurements and the logistics necessary to support field survey parties, both airborne and over ice traverses, are described and discussed.

41-1787
Turbulent free convection on a large vertical icewall in seawater.
Gominho, L.C., et al, *American Society of Mechanical Engineers. Winter annual meeting. Heat Transfer Division. Pamphlet paper*, [1984], No.84-WA/HT-15, 7p., 21 refs.
White, F.M.
Ice water interface, Turbulent flow, Ice melting, Convection, Sea water, Icebergs, Meltwater, Temperature distribution, Analysis (mathematics), Salinity, Boundary layer.

41-1788
Glacial and periglacial investigations in Skidadalum, Tröllaskagi, Northern Iceland.
Müller, H.-N., et al, *Polar geography and geology*, Jan.-Mar. 1986, Vol.10, p.1-18, 26 refs. Translated from Polarforschung, 1984, 54(2) p.95-109.
Stötter, J., Schubert, A., Betzler, A.
Mountain glaciers, Snow line, Cryogenic soils, Cryogenic structures, Cryoturbation, Frost mounds, Alpine landscapes.

41-1789
Study of tabular ground ice bodies from the Ledyanaya Gora section in the Yenisey valley using the oxygen isotope method.
Vaĭkmiae, R.A., et al, *Polar geography and geology*, Jan.-Mar. 1986, Vol.10, p.32-38, 25 refs. For Russian original see 40-1078.
Karpov, E.G.
Permafrost structure, Ground ice, Isotope analysis, Oxygen isotopes, Ice composition, Ice cores.

41-1790
Stratification in an ice core from Vestfonna, Nordaustlandet.
Punning, IA.-M.K., et al, *Polar geography and geology*, Jan.-Mar. 1986, Vol.10, p.39-43, 13 refs. For Russian original see 40-1076.
Ice cores, Drill core analysis, Isotope analysis.

41-1791
Methods of predicting destructive cryogenic phenomena associated with the development of an area from the example of NW Siberia.
Mel'nikov, P.I., et al, *Polar geography and geology*, Jan.-Mar. 1986, Vol.10, p.44-49, 6 refs. Translated from Akademiia nauk SSSR. Izvestiia. Seriia geograficheskaia, 1984, No.5 p.117-120.
Grave, N.A.
Permafrost structure, Permafrost hydrology, Thermokarst, Permafrost thermal properties, Solifluction, Permafrost forecasting, Geocryology, Snow cover effect, Economic development, Human factors, Vegetation factors.

41-1792
How to moor in ice. [Kak shvartovat'sia vo l'dakh?],
Braginets, O., *Morskoĭ flot*, 1986, No.8, p.60-61, In Russian.
Ice navigation, Artificial melting, Ports, Moorings, Icing, Ice cover thickness, Ice breaking.

41-1793
Origin of some buried ice forms in the Yamal tundra. [O proiskhozhdenii nekotorykh form pogrebennogo l'da tundry IAmala],
Krass, M.S., et al, *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, Sep.-Oct. 1986, No.5, p.66-75, In Russian. 19 refs.
Lovchuk, V.V.
Tundra, Permafrost hydrology, Thermokarst, Continuous permafrost, Taliks, Permafrost structure, Ice composition, Ice structure, Glacier ice, Moraines.

41-1794
Man-induced erosion in Bol'shezemel'skaya tundra. [K voprosu ob antropogennoĭ erozii v Bol'shezemel'skoĭ tundre],
Zharkova, IU.G., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, Sep.-Oct. 1986, No.5, p.94-98, In Russian. 7 refs.
Active layer, Cryogenic soils, Tundra, Soil erosion, Human factors, Grasses, Mosses, Permafrost thickness, Permafrost depth.

41-1795
Proceedings of the International Conference on Polar Lows, 1986.
International Conference on Polar Lows, Oslo, Norway, May 20-23, 1986, [1986], 364p., Refs. passim.
For selected papers see 41-1796 through 41-1815.
Lystad, M., ed, Houmb, O.G., ed.
Atmospheric circulation, Atmospheric pressure, Wind (meteorology), Synoptic meteorology, Remote sensing, Air temperature, Meetings, Ocean waves, Weather forecasting, Meteorological charts.

41-1796
Norwegian Polar Lows Project.
Lystad, M., International Conference on Polar Lows, Oslo, Norway, May 20-23, 1986. Proceedings. Edited by M. Lystad and O.G. Houmb, [1986], p.1-16, 27 refs.
Atmospheric circulation, Atmospheric pressure, Wind velocity, Air temperature, Remote sensing, Research projects, Synoptic meteorology, Weather forecasting, Ocean waves, Norwegian Sea, Greenland Sea.

41-1797
Different types of polar lows affecting Scandinavia.
Rasmussen, E., International Conference on Polar Lows, Oslo, Norway, May 20-23, 1986. Proceedings. Edited by M. Lystad and O.G. Houmb, [1986], p.17-29, 14 refs.
Atmospheric circulation, Atmospheric pressure, Air masses, Wind (meteorology), Remote sensing, Ice edge, Convection, Cloud cover.

41-1798
Climatological study of gale-producing polar lows near Norway.
Wilhelmsen, K., International Conference on Polar Lows, Oslo, Norway, May 20-23, 1986. Proceedings. Edited by M. Lystad and O.G. Houmb, [1986], p.31-39.
Atmospheric circulation, Atmospheric pressure, Ice cover effect, Wind (meteorology), Winter, Synoptic meteorology, Meteorological charts.

41-1799
Regional and seasonal distributions of low pressure weather systems in and around Norwegian waters.
Bilello, M.A., MP 2181, International Conference on Polar Lows, Oslo, Norway, May 20-23, 1986. Proceedings. Edited by M. Lystad and O.G. Houmb, [1986], p.53-66, 5 refs.
Atmospheric circulation, Atmospheric pressure, Surface temperature, Weather observations, Wind (meteorology), Oceans, Meteorological charts, Seasonal variations, Norway.
A North Polar region consisting of most of the Scandinavian countries and the major water bodies surrounding these nations was included in a study on the regional and seasonal distributions of low pressure surface weather systems. The region was divided into six zones approximately similar in area, and surface weather maps for three random years were obtained for detailed analysis of daily occurrences of surface lows that passed through these zones. The survey included the lowest isobaric pressure that identified the low, the intensity of the pressure gradient, the zone (or zones) in which the low was located, the frontal system associated with the low and its direction of movement. The results of this comprehensive data set were then summarized and seasonal and regional variations of these lows and their characteristics were obtained.

41-1800
Arctic Cyclone Expedition, 1984: research aircraft observations over the Norwegian and the Barents Sea.
Shapiro, M.A., International Conference on Polar Lows, Oslo, Norway, May 20-23, 1986. Proceedings. Edited by M. Lystad and O.G. Houmb, [1986], p.79-90, 20 refs.
Atmospheric circulation, Atmospheric pressure, Wind (meteorology), Ice edge, Air temperature, Boundary layer, Ocean waves, Winter, Meteorological charts.

41-1801
Analysis of a polar low in the Norwegian Sea, 29 February-1 March 1984.
Rabbe, A., International Conference on Polar Lows, Oslo, Norway, May 20-23, 1986. Proceedings. Edited by M. Lystad and O.G. Houmb, [1986], p.91-103.
Atmospheric circulation, Atmospheric pressure, Precipitation (meteorology), Meteorological charts, Icing, Wind velocity, Cloud cover, Norwegian Sea.

41-1802
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41-1804
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41-1806
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41-1807
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41-1808
Examples of the operational utility of radar observations of cold air vortices.
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Atmospheric circulation, Atmospheric pressure, Airborne radar, Ocean waves, Storms, Wind velocity, Models, Norwegian Sea.

41-1812
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Atmospheric circulation, Atmospheric pressure, Wind velocity, Wave propagation, Ocean waves, Models, Storms, Weather forecasting, Remote sensing.

41-1813
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Atmospheric circulation, Electromagnetic properties, Atmospheric pressure, Wind (meteorology), Ocean waves, Radar echoes, Wave propagation, Experimentation, Air water interactions, Surface roughness, Scattering.

41-1814
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41-1815
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41-1816
Heat release during agitated water movement near the ice surface. [Issledovanie teplootdachi pri kolebatel'nom dvizhenii vody u ledianoĭ poverkhnosti],
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Lakes, Shore erosion, Ground ice, Permafrost beneath lakes, Soil erosion, Permafrost thermal properties, Models.

41-1817
Role of glaciers in the discharge of Pamiro-Alai rivers. [Rol' lednikov v stoke rek Pamiro-Alaia],
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Firn, Glacial hydrology, Glacier ablation, Glacial rivers, Runoff, Alpine glaciation, Mountain glaciers.

41-1818
Chemical element balance in the end-moraine landscapes of southern taiga. [Balans khimicheskikh veshchestv v konechno-morennykh landshaftakh iuzhnoĭ taĭgi],
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41-1819
Glaciologists of the Academy of Sciences of the USSR for the front. [Gliatsiologi Akademii nauk SSSR—frontu],
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41-1820
Primary successions of Arctic tundras on the west coast of Spitsbergen (Svalbard). [Pervichnye sukttsessii arkticheskikh tundr zapadnogo poberezh'ia Shpitsbergena (Sval'bard)],
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41-1821
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41-1822
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41-1823
Influence of paleo-cryogenic microrelief on erosional processes and soil formation in the central Russian Plain. [Vlianie paleomerzlotnogo mikrorel'efa na erozionnye protsessy i pochvoobrazovanie v srednei chasti Russkoi ravniny],
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Paleoecology, Soil erosion, Soil formation, Permafrost distribution, Frost weathering, Microrelief, Hydrothermal processes, Frost action.

41-1824
Pseudomonas genus of bacteria isolated from Antarctic ice sheets. [Bakterii roda Pseudomonas iz lednikovoi tolshchi Antarktidy],
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Abyzov, S.S.
Glacier ice, Ice sheets, Colored ice, Bacteria, Antarctica—Vostok Station.
Five strains of Pseudomonas bacteria were found in Central Antarctica near Vostok Station at depths of 79-81 m and 91-92 m, corresponding to ice ages of 2100 and 25000 yrs, respectively. Besides green fluorescent pigments the bacteria also produce a brown melanin-like substance. Basic characteristics and possibilities of bacteria introduction into ice are discussed.

41-1825
Yeasts from Arctic East Siberian tundra. [Drozhzhi arkticheskoi vostochno-sibirskoi tundry],
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Cryogenic soils, Continuous permafrost, Tundra, Active layer, Soil microbiology.

41-1826
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Tundra, Cryogenic soils, Continuous permafrost, Soil microbiology, Bacteria.

41-1827
Splitting of phospholipids and change in the ultrastructure of pine needle cells after freezing. [Rasshcheplenie fosfolipidov i izmenenie ul'trastruktury kletok zimnei khvoi sosny posle ee promorazhivaniia],
Rodionov, V.S., et al, *Akademiia nauk SSSR. Izvestiia. Seriia biologicheskaia*, Nov.-Dec. 1985, No.6, p.934-939, In Russian with English summary. Refs. p.938-939.
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41-1828
Bathometer for water sampling in freezing weather. [Batometr dlia otbora prob vody zimoi],
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Samplers, Subglacial observations, Water, Sampling.

41-1829
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41-1830
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Il'in, M.M., Biulleten' nauchno tekhnicheskoi informatsii. Energetika IUzhnoi IAkutii (Bulletin of scientific-technical information. Power engineering of Southern Yakutia) edited by N.A. Petrov, Yakutsk, IAF SO AN SSSR, 1984, p.7-9, In Russian. 3 refs.
Residential buildings, Heating, Solar radiation, Permafrost beneath structures.

41-1831
Depth of sinking power-line support foundations. [O zaglublenii fundamentov opor linii elektroperedachi],
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Power line supports, Foundations, Anchors, Permafrost beneath structures, Earthwork.

41-1832
Benthos in the experimental bays of the Ob' River below Novosibirsk. [Bentos eksperimental'nykh zalivov Obi nizhe Novosibirska],
Blagovidova, L.A., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia*, Apr. 1985, No.6, Seriia biologicheskikh nauk, No.1, p.66-72, In Russian with English summary. 11 refs.
Levadnaia, G.D., Naumenko, IU.V.
Algae, Plankton, Electric power, Biomass, Rivers, Permafrost beneath lakes, Lakes.

41-1833
Introduced cold-resistant woody plants in Siberia. [Kharakteristika drevesnykh introdutsentov zimostoikikh v Sibiri],
Vstovskaia, T.N., *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia*, Apr. 1986, No.6, Seriia biologicheskikh nauk, No.1, p.22-24, In Russian with English summary. 10 refs.
Ecosystems, Introduced plants, Frost resistance, Plant ecology.

41-1834
Primary production in the Bratsk reservoir. Part 2. Assimilation of carbon by phytoplankton. [Pervichnaia produktsiia v Bratskom vodokhranilishche. Soobshchenie 2. Assimiliatsiia ugleroda fitoplanktonom],
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Krashchuk, L.S.
Electric power, Lakes, Algae, Cold tolerance, Subglacial observations.

41-1835
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Icebergs, Ice conditions, Long range forecasting, Pack ice, Wind factors, Ocean currents, Models, Statistical analysis, Seasonal variations, Canada—Newfoundland—Grand Banks.

41-1836
Operational iceberg trajectory forecasting model for the Grand Banks of Newfoundland.
De Margerie, S., et al, *Environmental Studies Revolving Funds. Report*, Nov. 1986, No.052, 86p., With French summary. 19 refs.
Icebergs, Drift, Wind factors, Velocity, Tides, Ocean waves, Forecasting, Mathematical models, Theories, Canada—Newfoundland—Grand Banks.

41-1837
On the Yukon and Tanana: river trip was "no picnic".
Staley, C., *Arctic soldier*, Fall 1985, 10(4), p.8-9.
Military operation, River flow, Navigation, Cold weather operation, United States—Alaska—Yukon River, United States—Alaska—Tanana River.

41-1838
Avalanche.
Strauss, W., *Arctic soldier*, Fall 1985, 10(4), p.26-27.
Avalanche formation, Military operation, Snow cover stability, Rescue operations, Mountains, Meteorological factors, Slope orientation, Wind factors.

41-1839
CRTC maintenance—beating the odds.
Dixon, C.A., Jr., *Arctic soldier*, Spring 1986, 11(2), p.16-18.
Military equipment, Cold weather operation, Winter maintenance.

41-1840
Silent warrior.
Kies, D., *Arctic soldier*, Spring 1986, 11(2), p.19-21.
Military operation, Cold weather performance, Education.

41-1841
Man vs. McKinley.
Dixon, C., et al, *Arctic soldier*, Summer 1986, 11(3), p.2-8.
Kerr, B.
Military operation, Glacier surfaces, Rescue operations, Crevasses, Expeditions, Mountains, Slopes.

41-1842
Glacier training.
Hook, C., *Arctic soldier*, Winter 1986, 11(4), p.11.
Military operation, Glacier surfaces, Crevasses, Rescue operations.

41-1843
Antarctic precipitation chemistry.
Delmas, R.J., *NATO advanced Study Institute series. Series G: Ecological sciences*, 1986, Vol.6, Chemistry of multiphase atmospheric systems. Edited by W. Jaeschke, p.249-266, Refs. p.265-266.
DLC QC879.6.N38
Aerosols, Snow composition, Ion density (concentration), Snow impurities.
Several thousand snow samples collected at various antarctic locations have been analyzed after melting by ion chromatography and acid base titrimetry in order to obtain the chemical composition of past and present antarctic precipitation. In particular the ionic balance of major impurities has been obtained for many samples. The concept of ionic budget is presented along with the way to calculate it and the various parameters which are involved, with special attention paid to acidity. The calculations are illustrated by results obtained at five selected antarctic sites (South Pole, Dome C, Vostok, D 57 and James Ross Island), and for various time periods (from the present back to the last glaciation). The predominant role played by gas-derived atmospheric acids (H2SO4, HNO3 and HCl) is emphasized. (Auth.)

41-1844
Beach forms and changes associated with retreating glacier ice, South Georgia.
Gordon, J.E., et al, *Geografiska annaler. Series A Physical geography*, 1986, 68A(1-2), p.15-24, 14 refs.
Hansom, J.D.
Glacial geology, Glacial deposits, Glacier oscillation, South Georgia.
Beach forms associated with the retreat of Cook Glacier, between 1975 and 1982 are compared with those found on polar beaches. The presence of certain characteristics but the absence of many others diagnostic of polar beaches distinguishes Cook beach as a sub-polar feature. Evidence from Neoglacial moraines and raised beach deposits indicates that former positions of Cook Glacier have controlled beach location but that the preservation of Neoglacial beaches depends on isostatic recovery outpacing beach reworking. At Cook beach the occurrence of glacial till overlying beach deposits adjacent to beach deposits overlying glacial till indicates the type of complex stratigraphy that may be present in Quaternary deposits from tidewater glacier environments. (Auth.)

41-1845
Present-day geomorphological processes on Prins Oscars Land, Svalbard.
Rudberg, S., *Geografiska annaler. Series A Physical geography*, 1986, 68A(1-2), p.41-63, 44 refs.
Frost weathering, Geomorphology, Periglacial processes, Landforms, Polygonal topography, Rock glaciers, Tundra, Talus, Norway—Spitsbergen.

41-1846
Dating slope deposits and estimating rates of rock wall retreat in Northwest Spitsbergen by lichenometry.
André, M.F., *Geografiska annaler. Series A Physical geography*, 1986, 68A(1-2), p.65-75, 26 refs.
Geomorphology, Soil dating, Lichens, Sediments, Rock glaciers, Slopes, Talus, Rocks, Measuring instruments, Paleoclimatology, Norway—Spitsbergen.

41-1847
Experimental frost shattering of some precambrian rocks, Finland.
Lautridou, J.P., et al, *Geografiska annaler. Series A Physical geography*, 1986, 68A(1-2), p.89-100, 37 refs.
Seppälä, M.
Frost shattering, Talus, Landforms, Temperature gradients, Frost weathering, Temperature effects, Experimentation, Grain size, Finland.

41-1848
Spatial variability of lake ice covers.
Bengtsson, L., *Geografiska annaler. Series A Physical geography*, 1986, 68A(1-2), p.113-121, 17 refs.
Lake ice, Ice conditions, Snow cover effect, Heat transfer, Ice growth, Snowdrifts, Water temperature, Ice cover thickness.

41-1849
Use of hydrojet technology for pil[illegible]ndation construction in the north of West Siberia.
Petrosian, L.R., et al, *Soil mechanics and foundation engineering*, Mar.-Apr. 1986, 23(2), p.39-41, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 2 refs.
Hydraulic jets, Foundations, Piles, Drilling.

41-1850
Determination of the bearing capacity of piles in permafrost by static penetration.
Trofimenkov, IU.G., et al, *Soil mechanics and foundation engineering*, Mar.-Apr. 1986, 23(2), p.58-63, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 7 refs.
Minkin, M.A., Gvozdik, V.I.
Foundations, Permafrost, Piles, Bearing tests.

41-1851
Modified method for intensive dynamic compaction of weak soils.
Marinescu, K., *Soil mechanics and foundation engineering*, Mar.-Apr. 1986, 23(2), p.73-78, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 4 refs.
Clays, Soil compaction, Sands, Loess, Wettability, Construction equipment.

41-1852
Inverse Stefan problem in casting multicomponent alloys.
Rutner, IA.F., *Journal of engineering physics*, Dec. 1985 (Pub. June 86), 49(6), p.1479-1483, Translated from Inzhenerno-fizicheskiĭ zhurnal. 2 refs.
Stefan problem, Mathematical models, Melting, Crystallization.

41-1853
Handbook of the statistics of various terrain and water (ice) backgrounds from selected U.S. locations.
La Rocca, A.J., et al, *Environmental Research Institute of Michigan, Ann Arbor. Technical report*, Jan. 1980, ERIM-139900-1-X, 785p., ADA-081 348, 8 refs.
Witte, D.J.
Topographic features, Ice conditions, Infrared reconnaissance, Spectroscopy, Filters, Aerial surveys, Seasonal variations, Manuals.

41-1854
Heat transfer from waves impacting on ice surface.
Gogolev, E.S., et al, *Heat transfer—Soviet research*, Mar.-Apr. 1986, 18(2), p.58-62, Translated from Akademiia Nauk SSSR. Sibirskoe otdelenie. Seriia tekhnicheskikh nauk, No.10/2, p.14-16, 1985. 8 refs.
Krasavin, A.N.
Permafrost transformation, Shore erosion, Permafrost weathering, Permafrost structure, Ground ice, Models.

41-1855
Reinforcement of ice bridges over rivers [illegible] layer-by-layer ice buildup.
Vislobitskiĭ, P.A., et al, *Heat transfer—Soviet research*, Mar.-Apr. 1986, 18(2), p.63-70, For Russian original see 40-2851. 4 refs.
Titarenko, A.I., Shpet, N.G.
Ice roads, Snow roads, Design, Winter maintenance.

41-1856
Characteristics of the Yala Glacier from the viewpoint of tritium content.
Kamiyama, K., et al, *Journal of geophysical research*, Oct. 20, 1986, 91(D11), p.11,841-11,844, 16 refs.
Kitaoka, K., Watanabe, O.
Radioactive isotopes, Glacier ice, Glacial hydrology, Nepal—Yala Glacier.

41-1857
Structure and dielectric properties at 4.8 and 9.5 GHz of saline ice.
Arcone, S.A., et al, *Journal of geophysical [illegible]search*, Dec. 15, 1986, 91(C12), MP 2182, p.1[illegible],30[illegible], 35 refs.
Gow, A.J., McGrew, S.
Salt ice, Sea ice, Simulation, Ice structure, Dielectric properties.
Saline ice slabs removed from ice sheets grown in an outdoor pool have been studied and related to the complex relative dielectric permittivity. The salt ice closely simulates Arctic sea ice in its structural and salinity characteristics which are regularly monitored in a number of ice sheets grown during the winters of 1983-1984 and 1984-1985. *In-situ* transmission measurements at similar frequencies were also made on the ice sheet itself using antennas located above and beneath the ice. The slab measurements were made during warming from -28 C to -2 C on slabs grown during the winter of 1983-1984 (4.75 GHz) and during a warming and cooling cycle over a slightly larger temperature range on slabs grown during the winter, 1984-1985 (4.80 and 9.50 GHz). Results from the two winters are compared and the differences analyzed. The *in-situ* measurements showed extremely high attenuation for the young (<12 cm) brine-rich ice. Good agreement was found between data for the more desalinated samples and theoretical values predicted by a previously proposed dielectric mixing model that was modified to account for the brine pocket geometry observed in thin sections, and also by including a bulk conductivity term to account for the observed loss (Auth. mod.)

41-1858
Water stress and ocean current measurements under first-year sea ice in the Canadian Arctic.
Shirasawa, K., *Journal of geophysical research*, Dec. 15, 1986, 91(C12), p.14,305-14,316, 25 refs.
Water pressure, Ocean currents, Sea ice, Canada—Northwest Territories—Lancaster Sound.

41-1859
Tidal spectrum underneath antarctic ice shelves.
Pedley, M., et al, *Journal of geophysical research*, Nov. 15, 1986, 91(C11), p.13,001-13,009, 19 refs.
Paren, J.G., Potter, J.R.
Tidal currents, Ice shelves, Antarctica—Ross Ice Shelf, Antarctica—George VI Ice Shelf, Antarctica—Ronne Ice Shelf, Antarctica—Ekström Ice Shelf.
A year-long tidal record has been obtained from beneath the George VI Ice Shelf. An unusual feature of the record is a significant response in tidal species 3 to 7. These harmonics are practically absent from records further north on the west coast of the Antarctic Peninsula but are present in all tidal height records from George VI Sound. A strong ter-diurnal signal also exists in the tidal currents under the ice shelf. Nonlinearity also occurs in the tidal motion of the Ronne and Ekström Ice Shelves but has not been reported from the Ross Ice Shelf. The tidal dynamics of several antarctic ice shelves have therefore been modified by a region of strong nonlinear response to tidal forcing. An anelastic component in the deformation of the ice at the grounding line is tentatively proposed as the mechanism responsible. The positioning of recording pressure sensors in pairs on the seafloor and at the ice shelf base will allow this hypothesis to be tested and also provide a value for the power dissipated by tidally induced flexure at the grounding line. (Auth.)

41-1860
Modeling winds and open-water buoy drift along the eastern Beaufort Sea coast, including the effects of the Brooks Range.
Kozo, T.L., et al, *Journal of geophysical research*, Nov. 15, 1986, 91(C11), p.13,011-13,032, 30 refs.
Robe, R.Q.
Wind direction, Drift stations, Weather stations, Wind velocity, Beaufort Sea.

41-1861
Atmospheric boundary layer modification in the marginal ice zone.
Bennett, T.J., Jr., et al, *Journal of geophysical research*, Nov. 15, 1986, 91(C11), p.13,033-13,044, 38 refs.
Hunkins, K.
Sea ice, Ice edge, Boundary layer, Ice air interface, Air flow.
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41-1877
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41-1881
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41-1883
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41-1887
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41-1888
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41-1889
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Residential buildings, Permafrost beneath structures, Concrete structures, Walls, Industrial buildings, Baykal Amur railroad, Foundations.

41-1890
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41-1891
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41-1895
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41-1896
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41-1897
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41-1898
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41-1899
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Waste treatment, Water treatment, Land reclamation, Chemical analysis, Design.

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41-1901
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[Zhizn' i usloviia ee sushchestvovaniia v bentali Barentseva moria]
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Bazzaev, T.V., et al, *Tsentral'naia aerologicheskaia observatoriia Trudy*, 1986, Vol.162, p.119-128, In Russian with English summary. 6 refs.
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41-1905
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41-1906
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41-1907
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Karpov, E.G., Chetvertichnye oledeneniia Srednei Sibiri (Quaternary glaciations of Central Siberia) edited by A.A. Velichko and L.L. Isaeva, Moscow, Nauka, 1986, p.73-78, In Russian. 11 refs.
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41-1908
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Sea ice distribution, Fast ice, Shore erosion, Sediment transport, Okhotsk Sea.

41-1909
Quantitative evaluation of the role of near-shore ice in shoreline modification in the Okhotsk Sea. [Kolichestvennaia otsenka roli pribrezhnykh l'dov v dinamike beregov Okhotskogo moria],
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Sea ice distribution, Drift, Fast ice, Shoreline modification, Shore erosion, Sediment transport, Okhotsk Sea.

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Loess, Geomorphology, Permafrost origin, Cryogenic structures, Permafrost structure, Thermokarst, Tundra, Edoma complex, Glacier ice, Paleogeography, Glacial geology, Ice dating.

41-1911
Glacier ice in Quaternary deposits of the Malyk-Siyenskaya basin. [Gletchernyi led v chetvertichnykh otlozheniiakh Malyk-Sienskoi vpadiny],
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Rudnev, A.V.
Loess, Permafrost structure, Ice veins, Ice dating, Edoma complex, Ice structure.

41-1912
Peculiarities of studying the Pleistocene Edoma series of the northeastern USSR. [Osobennosti izucheniia pleistotsenovykh otlozhenii Edomnoi serii Severo-Vostoka SSSR],
Tomirdiaro, S.V., et al, Pleistotsenovye oledeneniia vostoka Azii (Pleistocene glaciations in Eastern Asia) edited by V.G. Bespalyi, Magadan, 1984, p.159-173, In Russian. 17 refs.
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Loess, Ground ice, Cryogenic structures, Ice veins, Edoma complex, Stratigraphy, Peat, Tundra, Forest tundra.

41-1913
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41-1914
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41-1915
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Artificial islands, Ice conditions, Ice loads, Ice solid interface, Ocean waves, Environments.

41-1916
Transmission loss of thermotropic liquid-crystal polyester-jacketed optical fibre at low temperature.
Yamakawa, S., et al, *Electronics letters*, Mar. 1, 1984, 20(5), p.199-201, 4 refs.
Shuto, Y., Yamamoto, F.
Low temperature tests, Resins, Transmission lines, Protective coatings, Temperature effects.

41-1917
Evaluation of SPOT HRV simulation data for Corps of Engineers applications.
McKim, H.L., et al, *Advances in space research*, 1985, 5(5), MP 2184, p.61-71, 8 refs.
Merry, C.J.
Remote sensing, Spectroscopy, Photointerpretation, Data processing, Dredging, Water reserves, Ecology, Brightness.
During the summer of 1983 three Corps of Engineers project sites were overflown as part of the SPOT (Système Probatoire d'Observation de la Terre) High Resolution Visible (HRV) simulation campaign. The three sites were Chesapeake Bay, Maryland, Berlin Lake, Ohio, and Lac qui Parle, Minnesota. Multispectral imagery data at a 20-m resolution for three spectral bands (0.50-0.59 micron, 0.61-0.68 micron, 0.79-0.89 micron) were obtained for each of the sites. The data were analyzed for use in dredging, recreation resource management, water quality, and wildlife habitat applications.

41-1918
Science in Antarctica, Vol.9: Data compilation. [Nankyoku no kagaku 9 Shiriohen],
Tokyo, National Institute of Polar Research, Tokyo, Kokon Shoin, 1985, 288p., In Japanese. Refs. p.285-288
Snow, Ice, Research projects, Antarctica.
The volume, compiled by the entire teaching staff of teh NIPR and others, contains a wealth of reference data and information. Though primarily in Japanese, there are numerous notations, symbols, and words understandable to the English-speaking reader. More than half the book is arranged by discipline: Chapters 1-7 deal with earth sciences, snow and ice, meteorology, upper atmosphere, meteorites, biology, and oceanography, respectively. Chapter 8 is a glossary of international and scientific terms identified in both languages and defined in Japanese. Chapter 9 is a list of acronyms identified in both languages. Chapter 10 lists geographic locations in the Showa Station region. Names of the features are in Japanese with Romanized versions and geographic coordinates. Chapter 11 lists antarctic stations, some of the sub-antarctic islands, and national institutions which manage antarctic research programs. Chapter 12 lists standard measurement symbols, definitions, units of measurement, and equivalents. Chapter 13 is a chronological list of antarctic discovery and exploration activities from 1738 through 1984.

41-1919
Performance of the Zeya hydroelectric power plant dam during its initial period. [Rabota plotiny Zeiskoi GES v nachal'nyi period ekspluatatsii],
Epifanov, A.P., et al, *Energeticheskoe stroitel'stvo*, Oct. 1986, No.10, p.18-21, In Russian. 2 refs.
Sil'nitskii, V.I., Uriupin, V.S.
Dams, Concrete structures, Permafrost beneath structures, Concrete freezing, Hydraulic structures, Reinforced concretes, Cold weather performance.

41-1920
Construction of 110 kV substations using low-oil breakers in northern areas of the Tyumen' region. [Osobennosti stroitel'stva PS 110 kV s primeneniem malomaslianykh vykliuchatelei v severnykh raionakh Tiumenskoi oblasti],
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Vyryshev, G.I.
Foundations, Industrial buildings, Concrete piles, Permafrost beneath structures, Paludification, Earthwork, Electric power.

41-1921
Special load lifter for installing 1150 kV overhead lines. [Spetsial'noe gruzopod"emnoe ustroistvo dlia montazha opor VL 1150 kV],
Mandrikov, V.I., et al, *Energeticheskoe stroitel'stvo*, Oct. 1986, No.10, p.23-25, In Russian.
Balabaev, IU.M.
Power lines, Power line supports, Tracked vehicles, All terrain vehicles.

41-1922
Ultrasonic tests of grouting quality in concrete dams. [Osobennosti ul'trazvukovogo kontrolia kachestva omonolichivaniia betonnykh plotin],
Ermoshin, V.M., et al, *Energeticheskoe stroitel'stvo*, Oct. 1986, No.10, p.33-36, In Russian. 5 refs.
Kudinov, V.A.
Concrete structures, Dams, Grouting, Ultrasonic tests, Hydraulic structures.

41-1923
New methods of determining ice and wind loads during icing. [Primenenie novykh metodov opredeleniia gololednykh i vetrovykh nagruzok pri gololede],
Gonchar, L.G., et al, *Energeticheskoe stroitel'stvo*, Oct. 1986, No.10, p.37-38, In Russian. 5 refs.
Landa, M.L.
Power line icing, Ice accretion, Ice loads, Wind pressure.

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Salt ice, Sea water, Ice surface, Wind erosion, Chemical composition.

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Mathematical models, Meteorological data, Meteorological charts, Wind velocity, Air temperature, Boundary layer, Air water interactions, Continental shelves.

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Possible CO2-induced warming effects on the cryosphere.
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DLC QC884.2.C5C575
Carbon dioxide, Climatic changes, Sea ice distribution, Ice edge, Snow cover distribution.
This study updates preliminary assessments, in earlier studies, of the possible impacts of projected climatic perturbations on global snow and ice cover. It also attempts to develop a composite picture from modelling results, analytical projections, and analogs based on other warm climatic intervals. Components of global ice and snow cover - area, volume, and sea level equivalent - are tabulated, showing that 10% of the antarctic ice is in West and 90% in East Antarctica. It is suggested that possible changes in ice sheet accumulation rates should be monitored at regular intervals for large-scale transects across key areas in Antarctica and Greenland using satellite laser altimetry

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DLC QC884.2.C5C575
Ice cover, Paleoclimatology, Climatic changes, Models, Glaciation.
The spatially different history of the large continental ice caps of Antarctica and Greenland and of the Arctic and Antarctic ice are reviewed, and evidence for the unipolar glaciations is presented. The changes in the land-sea pattern and mountain height since that time, involving changes in oceanographic circulations, such as the development of the cold Labrador Current and the evolution of the large monsoon system, are reviewed. An attempt is made to estimate the climatic zonation of a unipolar glaciated Earth whereby the different heat budget terms are evaluated and extrapolated to conditions of unipolar glaciation, including extrapolation of the tropospheric lapse rate above an ice free Arctic Ocean and a final estimation of the shift of the climatic belts. The semiempirical results obtained are shown to be, in principle coherent with the model results of the GFDL group.

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Hemleben, C., Spindler, M.
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Samples of a green iceberg, sighted near Kapp Norvegia in the Weddell Sea on Feb. 16, 1985, were analyzed. The iceberg was drifting and protruded approximately 10 m above the sea surface. It is suggested from its appearance that it had been thoroughly flushed and had subsequently capsized. A 20 kg block was chipped off the iceberg with a pickaxe. The color of the block changed from green to a translucent white upon separation from the iceberg. It is assumed that iron, copper and other metallic compounds were responsible for the green color and it is concluded that the color was not of biological origin. (Auth.)

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Jezek, K.C.
Ice sheets, Ice deformation, Ice structure, Radio echo soundings, Greenland—Dye 3.
The deformation of layering into folds is modeled for a linear viscous medium moving over a décollement. Folds are generated by flow variations caused by relief on the décollement, variations in friction, or both. The model is applied to folds forming now in the Greenland ice sheet near Dye 3, for which more complete data are available than for analogous solid earth situations and for which the décollement is at or near the bed. The folds (wavelength 4-8 km) are detected by radio reflection sounding. Measured surface deformation and deformation rate are used with the radar results to test the theory. Calculated fold amplitude is only 20% less than that measured, which indicates that the theory is substantially correct. Inversion of the data to calculate basal drag and velocity variations is not helpful for near Dye 3 because many different basal boundary conditions can lead to the observed deformations.

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Avalanche formation, Slope stability, Snow cover effect, Vegetation, Mapping, Mountains, Erosion.

41-1978
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Marbouty, D., Violent forces of nature. Edited by R.H. Maybury, Mt. Airy, MD, Lomond Publications, Inc., 1986, p.125-142, 13 refs.
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Defrosting, Pumps, Heating, Air conditioning, Refrigeration.

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Frost action, Bibliographies, Frost resistance, Construction materials, Metals, Stresses, Strains, Elastic properties, Plastic deformation, Cooling rate.

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41-1987
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Resins, Polymers, Thermal stresses, Materials, Meetings, Thermal properties, Temperature variations, Strength, Cryogenics.

41-1988
Thermophysical properties data on graphite/polyimide composite materials.
Campbell, M.D., et al, Composites for extreme environments, edited by N.R. Adsit, American Society for Testing and Materials. Special technical publication, No.768, Philadelphia, ASTM, 1982, p.54-72, 1 ref.
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Resins, Polymers, Thermal properties, Physical properties, Thermal conductivity, Specific heat, Materials, Tests.

41-1989
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Resins, Polymers, Cryogenics, Elastic properties, Strength, Fracturing, Materials, Temperature effects.

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Resins, Cryogenic structures, Thermal conductivity, Thermal insulation, Fatigue (materials), Strength, Tensile properties, Materials, Polymers, Structural analysis.

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Resins, Polymers, Flexural strength, Compressive properties, Cracking (fracturing), Thermal properties, Materials.

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Snow fences, Sands, Design, Wind factors, Countermeasures.

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Saunders, J.F., et al, *U.S. Patent Office. Patent,* July 13, 1982, 14 col., USP-4,338,790, 9 refs.
Krocker, R.E.
Defrosting, Pumps, Heat transfer, Heating, Ice control, Hoarfrost.

41-1994
Ice breaker.
Regina, M.J., *U.S. Patent Office. Patent,* Dec. 14, 1982, 2 col., USP-4,363,155, 6 refs.
Ice removal, Vehicles, Windows, Ice breaking.

41-1995
Microwave ice prevention system.
Hansman, R.J., Jr., *U.S. Patent Office. Patent,* Dec. 21, 1982, 4 col., USP-4,365,131, 1 ref.
Aircraft icing, Ice prevention, Microwaves, Heating, Electromagnetic properties, Countermeasures.

41-1996
Electric heater-blower apparatus for removing frost and snow from vehicle windows.
Stephens, W.S., III, *U.S. Patent Office. Patent,* Dec. 28, 1982, 6 col., USP-4,366,368, 14 refs.
Ice removal, Snow removal, Vehicles, Windows, Electric heating, Hoarfrost, Equipment.

41-1997
Microclimate of concrete barrier walls: temperature, moisture and salt content.
Hudec, P.P., et al, *Cement and concrete research,* Sep. 1986, 16(5), p.615-623, 2 refs.
MacInnis, C., Moukwa, M.
Concrete strength, Freeze thaw cycles, Walls, Concrete structures, Microclimatology, Chemical analysis, Temperature variations, Humidity, Air temperature.

41-1998
Ice formation in hardened cement paste. Part 1. Room temperature cured pastes with variable moisture contents.
Bager, D.H., et al, *Cement and concrete research,* Sep. 1986, 16(5), p.709-720, 10 refs.
Sellevold, E.J.
Cements, Ice formation, Water cement ratio, Freezing points, Temperature effects, Moisture, Vapor pressure.

41-1999
Thermal deformation of loaded concrete at low temperature. 2. Transverse deformation.
Elices, M., et al, *Cement and concrete research,* Sep. 1986, 16(5), p.741-748, 5 refs.
Planas, J., Corres, H.
Concrete strength, Freeze thaw cycles, Loads (forces), Thermal effects, Deformation, Strains, Experimentation.

41-2000
Ice formation in hardened cement paste. Part 2. Drying and resaturation on room temperature cured pastes.
Bager, D.H., et al, *Cement and concrete research,* Nov. 1986, 16(6), p.835-844, 10 refs.
Sellevold, E.J.
Cements, Ice formation, Freeze thaw cycles, Drying, Water content, Saturation, Temperature effects, Vapor pressure.

41-2001
Thermal deformation of loaded concrete at low temperature. 3. Lightweight concrete.
Corres, H., et al, *Cement and concrete research,* Nov. 1986, 16(6), p.845-852, 5 refs.
Elices, M., Planas, J.
Concrete strength, Low temperature tests, Loads (forces), Deformation, Water content, Lightweight concretes.

41-2002
Mathematical modeling of the freezing process of concrete and aggregates.
Olsen, M.P.J., *Cement and concrete research,* Jan. 1984, 14(1), p.113-122, 30 refs.
Concrete freezing, Frost penetration, Freeze thaw cycles, Concrete durability, Water content, Mathematical models, Porous materials, Forecasting.

41-2003
Thermal deformation of loaded concrete during thermal cycles from 20 C to -165 C.
Planas, J., et al, *Cement and concrete research,* Sep. 1984, 14(5), p.639-644, 4 refs.
Corres, H., Elices, M., Chueca, R.
Concrete strength, Loads (forces), Thermal effects, Deformation, Water content, Saturation, Strains, Cryogenic structures, Compressive properties.

41-2004
Formation of polar stratospheric clouds.
Steele, H.M., et al, *Journal of the atmospheric sciences,* Aug. 1983, 40(8), p.2055-2067, 43 refs.
Hamill, P., McCormick, M.P., Swissler, T.J.
Stratosphere, Clouds (meteorology), Aerosols, Air temperature.
Measurements of the stratospheric aerosol by SAM II during the northern and southern winters of 1979 showed a pronounced increase in extinction on occasions when the temperature fell to a low value (below 200 K). In this paper the correlation between extinction and temperature is evaluated from thermodynamic considerations. As the temperature falls, the hygroscopic aerosols absorb water vapor from the atmosphere, growing as they do so. The effect of the temperature on the size distribution and composition of the aerosol is determined, and the optical extinction at 1 micron wavelength is calculated using Mie scattering theory. Theoretical predictions of the change in extinction with temperature and humidity are compared with the SAM II results at 100 mb, and the water vapor mixing ratio and aerosol number density are inferred from these results. A best fit of the theoretical curves to the SAM II data gives a water vapor content of 5-6 ppmv, and a total particle number density of 6-7 particles/cu cm. (Auth.)

41-2005
Climatic changes on a yearly to millennial basis.
Nordic Symposium on Climatic Changes and Related Problems, 2nd, Stockholm, Sweden, May 16-20, 1983, Dordrecht, Holland, D. Reidel Publishing Co., 1984, 667p., Refs. passim. For selected papers see 41-1973, 41-1974 and 41-2006 through 41-2010.
Mörner, N.-A., ed, Karlén, W., ed.
Climatic changes, Glaciation, Paleoclimatology, Climatic factors, Meetings.

41-2006
Peat inception and climatic change in northern Quebec.
Payette, S., Nordic Symposium on Climatic Changes and Related Problems, 2nd, Stockholm, Sweden, May 16-20, 1983. Proceedings. Edited by N.-A. Mörner and W. Karlén, Dordrecht, Holland, D. Reidel Publishing Co., 1984, p.173-179, 15 refs.
Peat, Swamps, Climatic changes, Paleoclimatology, Canada—Quebec.

41-2007
Climate and glaciation in Kong Karls Land, eastern Svalbard.
Holmgren, B., et al, Nordic Symposium on Climatic Changes and Related Problems, 2nd, Stockholm, Sweden, May 16-20, 1983. Proceedings. Edited by N.-A. Mörner and W. Karlén, Dordrecht, Holland, D. Reidel Publishing Co., 1984, p.291-302, 13 refs.
Olsson, I., Skye, E., Alm, G.
Glaciation, Climatic changes, Lichens, Mosses, Microclimatology, Norway—Svalbard.

41-2008
Impact of climate on grass growth and hay yield in Iceland: A.D. 1601 to 1780.
Ogilvie, A.E.J., Nordic Symposium on Climatic Changes and Related Problems, 2nd, Stockholm, Sweden, May 16-20, 1983. Proceedings. Edited by N.-A. Mörner and W. Karlén, Dordrecht, Holland, D. Reidel Publishing Co., 1984, p.343-352, 12 refs.
Grasses, Climatic factors, Growth, Climatic changes, Iceland.

41-2009
Nature and significance of cloud-cryosphere interactions in the marginal snow and ice zones.
Barry, R.G., Nordic Symposium on Climatic Changes and Related Problems, 2nd, Stockholm, Sweden, May 16-20, 1983. Proceedings. Edited by N.-A. Mörner and W. Karlén, Dordrecht, Holland, D. Reidel Publishing Co., 1984, p.605-607, 6 refs.
Cloud cover, Ice cover effect, Snow cover effect, Albedo, Climatic changes, Ice edge.

41-2010
Energy-flow budgets in aquatic ecosystems and the conflict between biology and geophysics about earth-axis tilt.
Petersen, G.H., Nordic Symposium on Climatic Changes and Related Problems, 2nd, Stockholm, Sweden, May 16-20, 1983. Proceedings. Edited by N.-A. Mörner and W. Karlén, Dordrecht, Holland, D. Reidel Publishing Co., 1984, p.621-633, 25 refs.
Heat transfer, Marine biology, Ecosystems, Polar regions, Geophysical surveys, Photosynthesis.

41-2011
Temporal air-temperature structure in the Antarctic. [O vremennoĭ strukture temperatury vozdukha v Antarktike],
Donina, S.M., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.370, p.40-44, In Russian. 4 refs.
DLC G600.L4
Air temperature, Weather forecasting.
The space-time features of the surface thermal structure of air masses over various antarctic stations, for the months of Jan. and July, are discussed. Quantitative data on the interactions and variations of air temperature useful in weather forecasting are presented.

41-2012
Homogeneity of series of mean monthly wind speed data for Soviet antarctic stations. [Ob odnorodnosti riadov srednemesiachnoĭ skorosti vetra na sovetskikh antarkticheskikh stantsiiakh],
Kolosova, N.V., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.370, p.45-54, In Russian. 5 refs.
DLC G600.L4
Wind velocity, Weather observations, Antarctica—Vostok Station, Antarctica—Mirnyy Station, Antarctica—Molodezhnaya Station.
Investigation of structural features of the scalar velocity of surface winds, based on parametric and nonparametric criteria, is reported. Results found at coastal stations Mirnyy and Molodezhnaya differ from those found at the inland station Vostok, where a significant increase of yearly dispersion fluctuation is shown.

41-2013
Surface wind velocity profiles in Antarctica. [O profile prizemnoĭ skorosti vetra v Antarktide],
Kolosova, N.V., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.370, p.55-62, In Russian. 13 refs.
DLC G600.L4
Wind velocity, Antarctica—Mirnyy Station, Antarctica—Vostok Station.
Results of analyses of wind velocity, measured at two levels at Vostok and Mirnyy stations, are presented. It is shown that on the coast, where katabatic winds prevail throughout the year, the differences of the mean wind velocity values at the boundaries of the 6-8 m layer above surface agree well with logarithmic law of wind velocity changes with height. Over the Antarctic Plateau which is characterized by constant large-scale inversions, the wind velocity profile is closer to an exponential correlation. It is shown that the most stable relationships occur in summer, the least stable ones during the transition seasons.

41-2014
Engineering creep models for frozen soil behaviour.
Berggren, A.-L., University of Trondheim, Norwegian Institute of Technology, Dec. 1983, 357p., Ph.D. thesis. Refs. p.153-157.
Frozen ground mechanics, Soil creep, Ground ice, Frozen ground strength, Rheology, Engineering, Unfrozen water content, Mathematical models, Stresses, Temperature effects, Time factor.

41-2015
Internal pressures in freezing soils.
Wood, J.A., Ottawa, Carleton University, Nov. 29, 1985, 261p., Ph.D. thesis. Refs. p.205-216.
Soil freezing, Soil pressure, Frost heave, Rheology, Ice lenses, Freezing points, Frost penetration, Thermodynamics, Models, Relaxation (mechanics), Ice pressure.

41-2016
Thermoerosion of frozen sediment under wave action.
Kobayashi, N., et al, *Journal of waterway, port, coastal and ocean engineering*, Jan. 1986, 112(1), p.140-158, 23 refs.
Aktan, D
Frozen ground, Sediments, Soil erosion, Tundra, Thermal effects, Ocean waves, Ground thawing, Analysis (mathematics).

41-2017
Freezing temperatures of water, alkanoic acids and their mixtures.
Barr, R.S., et al, *Chemical engineering journal*, Oct. 1986, 33(2), p.79-86, 13 refs.
Newsham, D.M.T.
Freezing points, Water, Liquid solid interfaces, Temperature effects, Solutions.

41-2018
Soviet research station disappears. [Une station de recherche soviétique disparue],
Fresco-Mayoux, A., *Science et vie*, Nov. 1986, No.830, p.61-63, In French.
Stations, Cost analysis, Antarctica—Filchner Ice Shelf, Antarctica—Druzhnaya Station.
The disappearance of the Soviet antarctic station Druzhnaya from the shelf ice over the Weddell Sea in October 1986 is reported. A short review of the establishment and cost of Druzhnaya is given and economic considerations for siting the station on the Filchner Ice Shelf are discussed and shown on a sketch map. Since the precise cause for the disappearance is unknown, certain speculative causes are proffered.

41-2019
Nitrate flux on the Ross Ice Shelf, Antarctica, and its relation to solar cosmic rays.
Zeller, E.J., et al, *Geophysical research letters*, Nov. 1986, 13(12), p.1264-1267, 23 refs.
Dreschhoff, G.A.M., Laird, C.M.
Ice shelves, Solar activity, Snow impurities, Solar radiation, Snow composition, Firn stratification, Periodic variations, Antarctica—Ross Ice Shelf.
Nitrate flux has been determined in the snow sequence deposited at Windless Bight on the Ross Ice Shelf. The data were obtained from on-site analysis of nitrate concentrations from a glaciological pit and a firn core spanning the time interval from midwinter 1971 to Jan. 1986. The high resolution data can be combined with precipitation records collected from adjacent areas to provide a record of nitrate flux. The resulting time series contains a signal which corresponds to the two major solar events of 1972 and 1984. The concentration and flux profiles may be useful in studies of antarctic ozone depletion. (Auth.)

41-2020
Proceedings.
International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986, Vancouver, B.C., D.F. Dickins Associates, 1986, 2 vols. (877p.), Refs. passim. Includes discussions after each paper. For selected papers see 41-2021 through 41-2062.
Cassidy, A., ed.
Ice navigation, Marine transportation, Ice conditions, Icebreakers, Meetings, Ice loads, Ice breaking, Ships, Airplanes, Design, Ice roads.

41-2021
Canada's Arctic marine transportation research programs.
Brenckmann, M., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.1-18.
Marine transportation, Ice navigation, Ice conditions, Icebreakers, Research projects, Ships, Canada.

41-2022
Review of research on polar class icebreakers to develop arctic ship design guidelines.
Rinehart, V., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.19-40.
Seibold, F., Voelker, R.
Icebreakers, Ice navigation, Marine transportation, Ice conditions, Ship icing, Design.

41-2023
Current problems in arctic vessel research.
Sukselainen, I.J., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.41-65, 40 refs.
Riska, K
Ice navigation, Icebreakers, Ice loads, Ice conditions, Ships, Safety, Design, Ice friction.

41-2024
Updating the Canadian ice class rules through research and development.
Grinstead, J., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.66-104, 22 refs.
Ice navigation, Ice loads, Marine transportation, Ice pressure, Ships, Steels, Models, Safety, Water pollution, Legislation, Countermeasures.

41-2025
Local and global strength aspects for icebreaking ships.
Ghoneim, G.A.M., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.105-148, 51 refs.
Icebreakers, Ice breaking, Ice navigation, Ice loads, Models, Ice solid interface, Ice pressure, Analysis (mathematics), Velocity.

41-2026
Canada's new Institute for Marine Dynamics, opportunity for improved polar transportation.
Jeffrey, N.E., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.149-168, 3 refs.
Jones, S.J.
Ice navigation, Marine transportation, Ice loads, Organizations, Models, Research projects, Laboratories, Tests.

41-2027
Future icebreaker design.
Johansson, B.M., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.169-200, 10 refs.
Revill, C.R.
Icebreakers, Ice navigation, Ice breaking, Ice pressure, Design, Ice conditions, Ice cover thickness.

41-2028
Advances in icebreaker technology in West Germany.
Schwarz, J., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.201-219, 10 refs.
Icebreakers, Ice loads, Ice breaking, Models, Offshore structures, Engineering, Tests, Ice friction.

41-2029
Arctic marine technology: state of the art and prospects for the 1990's.
Stubbs, J.T., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.220-243, 30 refs.
Makinen, E.
Marine transportation, Ice navigation, Icebreakers, Ice conditions, Design criteria, Ice loads, Tests.

41-2030
Design and operation of the *Arctic Ivik*, a new Arctic class II vessel for the Beaufort Sea.
Armour, R., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.244-256.
Wainwright, J., Hutton, H.
Ice navigation, Ships, Marine transportation, Design, Ice loads, Strength.

41-2031
Design for a novel icebreaker assisting Arctic LNG vessels.
Lindqvist, G., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.257-278.
Gordin, S.
Icebreakers, Marine transportation, Ice navigation, Design, Ice conditions, Ice friction.

41-2032
Air services support to northern operators.
Davidson, D., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.279-294, 2 refs.
Navigation, Ice runways, Ice cover strength, Aircraft landing areas, Airports.

41-2033
Scheduled Arctic helicopter operations.
Oxholm, O., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.295-320.
Helicopters, Navigation, Aircraft landing areas, Cold weather operation, Transportation, Meteorological factors.

41-2034
Development of helicopter operational capabilities in the Arctic.
Wolfe-Milner, T., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.336-351.
Helicopters, Navigation, Cold weather operation, Safety, Cold weather survival.

41-2035
Transportation considerations in Arctic mining development.
Giegerich, H., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.352-367.
Transportation, Marine transportation, Mining, Ice navigation, Ice loads, Minerals.

41-2036
Combining of air and ice road transportation methods to build and support northern mines.
Tamblyn, H., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.368-375.
Ice roads, Transportation, Airplanes, Motor vehicles, Maintenance.

41-2037
Complementary modes of air/ground transport mechanisms in Antarctic logistics support.
Baker, M.J., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.376-419, 16 refs.
Whiteman, P.I.
Transportation, Logistics, Navigation, Vehicles.
The style and content of logistics support for Antarctic field activities is critically dependent upon a careful coordination of air and ground transportation modes. Available financial resources limit the choice of suitable complementary vehicles and ensuing modus operandi. The British Antarctic Survey in particular has developed a system of Antarctic field operations which virtually excludes the use of rotary winged aircraft, in distinct contrast to the methods of other Antarctic nations. Comparative analyses of different nations' systems of operations provides a rationale for the BAS approach in terms of cost-effectiveness for scientific output achieved, but at the unavoidable expense of a restriction of accessible geographical area, and numbers of field staff supportable in a given field season. A proposal to expand field operations in these two vital respects without an unacceptable sacrifice of cost-effectiveness is outlined.

41-2038
Drilling rig transportation in the Canadian arctic islands.
Baudais, D.J., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.1. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.~20-451, 3 refs.
Franklin, L.J.
Marine transportation, Equipment, Offshore drilling, Offshore structures, Ice conditions, Transportation, Design, Airplanes.

41-2039
Logistics support for Arctic scientific camps and drifting ice stations.
Hobson, G.D., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.462-472.
Drift stations, Ice islands, Logistics, Equipment, Ice floes, Transportation, Telecommunication, Safety, Drift.

41-2040
Aircraft support of research in Antarctica.
Bresnahan, D.M., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.473-494, 3 refs.
Airplanes, Research projects, Navigation, Ice conditions.
The aircraft support system of the U.S. Antarctic Program is described, with emphasis on the Lockheed LC-130 Hercules aircraft, the backbone of the system. The aircraft is described and illustrated and details are provided on hours flown, the landing fields (locations, dimensions, markings, communication and other facilities, etc., described in text and diagrams), intercontinental flights, enroute procedures, emergency procedures, survival equipment, restrictions, and airborne research capabilities. The combined use of the LC-130 aircraft and the UH-1N helicopter is seen as providing an unmatched logistics capability.

41-2041
Experiences with High Arctic offstrip aircraft operations.
Doyle, P., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.495-511.
Navigation, Aircraft landing areas, Ice conditions, Tundra, Permafrost, Active layer, Snow cover.

41-2042
***Icebird*--a new generation of polar resupply vessel.**
Brune, E., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.512-522, Includes discussion.
Ice navigation, Marine transportation, Icebreakers, Logistics, Ships.
The M.V. *Icebird* was designed to fulfill the concept of enabling increased efficiency in the logistics of supplying established polar stations, including Antarctica, the rapid establishment of new stations or alternatively a self supporting polar cargo ship. This concept required a vessel which was of high ice class, could accommodate large number of expeditioners, allow helicopter operations, efficiently handle cargoes both liquid and dry (mobile containerized or bulk) while still allowing the vessel to maintain its maximum deadweight and cubic capacities. Its record after two Antarctic seasons chartered to the Australian Department of Science for the resupply of Australian Antarctic stations has proven the success of this vessel. A detailed description of the vessel is given.

41-2043
Icebreaking operations in McMurdo Sound, Antarctica.
Wubbold, J.H., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.523-530, Includes discussion.
Logistics, Icebreakers, Sea ice distribution, Ice breaking, Ice conditions, Icebergs, Antarctica—McMurdo Sound.
Icebreaking capabilities and conditions of operation of the U.S. Antarctic Support Program are briefly outlined and illustrated. The discussion deals with radar capabilities and safety factors.

41-2044
Operating and design considerations for Antarctic resupply vessels.
Mercer, C.L., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.531-547, Includes discussion.
Woodfield, T.
Ice navigation, Marine transportation, Logistics, Tanker ships, Helicopters, Design, Safety.
The Antarctic resupply multi-purpose vessels should incorporate the facilities (a) to operate in ice filled areas; (b) to carry dry cargo; (c) to act as a tanker; (d) to act as an aircraft (viz helicopter) carrier; and (e) to be completely self-discharging. A case is put forward for using ice-strengthened vessels as against icebreakers. Safety, the non-suitability of the present classification rules for Antarctic resupply vessels, and the need for suitable experience, particularly in this unique Antarctic environment are discussed. (Auth. mod.)

41-2045
Operating experiences with the *Polarstern* in Antarctica.
Suhrmeyer, L., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.548-562, 1 ref. Includes discussion.
Kohnen, H.
Logistics, Ice navigation, Icebreakers, Ice conditions, Ice breaking, Ice cover thickness.
R.V. *Polarstern* is an icebreaking research and supply vessel commissioned 1982 by the Federal Republic of Germany to carry out scientific missions in both polar regions. The Alfred-Wegener-Institut for Polar and Marine Research in Bremerhaven is responsible for the missions. R.V. *Polarstern* is a double hull icebreaker powered by 19 200 shaft hp which enable the ship to operate in ice covered waters breaking ice up to 3 m thickness. The basic dimensions, the maximum displacement and the maximum speed of the ship are given. *Polarstern* can operate on sea 100 to 120 days without resupply and refueling. Various laboratories and other research facilities allow 30 to 40 scientists to carry out investigations in biology, fishery research, geology, geophysics, meteorology and oceanography. Up to six cruises are performed annually.

41-2046
Operating performance of the Antarctic icebreaker *Shirase* and highland traverse by snowvehicle.
Ishizawa, K., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.563-578, 1 ref. Includes discussion.
Icebreakers, Ice navigation, Snow vehicles, Glaciology, Traverses, Ice conditions.
A new icebreaker *Shirase* was built in 1982 in replacement of the icebreaker *Fuji*. On the occasion of this replacement, both strengthening of propulsion power and expansion of the hull were done to ensure the ability to approach Showa Station and to satisfy the requirement for cargo space. The vessel is described in detail and shown in a diagram. These icebreakers serve for the transportation of personnel and cargos to and from Antarctica and onboard researches of the Japanese Antarctic Research Expedition. Scientific research in the Antarctic inland area was mainly carried out with the support of oversnow vehicles of SM50 type, design of which is mentioned.

41-2047
AP.1-88 hovercraft in ice operations.
Rosquist, K., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.590-601.
Air cushion vehicles, Ice conditions, Cold weather operation, Ship icing, Wind direction, Superstructures, Countermeasures.

41-2048
Current ice road and structure design and construction procedures.
Masterson, D.M., et al, International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.602-648, 16 refs.
Gamble, R.P.
Marine transportation, Ice roads, Artificial freezing, Ice cover thickness, Bearing strength, Flooding, Floating ice, Grounded ice, Ice cover strength, Design, Cold weather construction, Flexural strength.

41-2049
Design of tracked firefighting vehicles for the Soviet Arctic.
Pusch, A.A., International Polar Transportation Conference (IPTC 86), Vancouver, Canada, May 4-8, 1986. Proceedings. Vol.2. Edited by A. Cassidy, Vancouver, B.C., D.F. Dickins Associates, 1986, p.649-669.
Tracked vehicles, Transportation, Logistics, Design, Fires, Countermeasures.
Canadian Foremost Ltd. is a polar transportation specialist with experience in vehicle design for both the Arctic and Antarctic regions. Vehicles in both the tracked and high flotation rubber tire product lines are currently in use in the Canadian and U.S. Arctic, the northern regions of the U.S.S.R. and the Antarctic. This paper focuses on the design of the Foremost Husky 8 Fire Fighting vehicles manufactured specifically to satisfy the operational and logistical requirements of the Soviet Union's Arctic regions. Package performance criteria, initial and final design, and testing for the polar (summer/winter) high mobility tracked vehicle are discussed. Additionally, major ongoing international research projects in arctic and antarctic transportation are reviewed. Transportation logistics and operational experiences will be touched upon. (Auth.)

41-2050
CATCO: remote all terrain heavy transportation.
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41-2111
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Enting, I.G., et al, *Pure and applied geophysics*, 1985, Vol.123, p.777-790, 15 refs.
Mansbridge, J.V.
Ice composition, Bubbles, Age determination, Firn, Chemical composition, Carbon dioxide, Atmospheric composition, Analysis (mathematics).
A mathematical description of the trapping of air bubbles in polar ice is analyzed in order to assist in the interpretation of measurements of anthropogenic constituents which have recently increased on time scales comparable to the firn closure time. The effective age of a layer of ice is defined in terms of the time at which the atmospheric concentration of a constituent was equal to the mean concentration for bubbles found in that layer. Under the assumption of uniform snow deposition at a particular site, the effective age is found to be the same for all constituents that vary linearly throughout the trapping period for a layer. Using a trapping distribution based on theoretical and observational studies, the corrections for non-linearity are found to be small for typical anthropogenic constituents. This property makes it possible to use smoothly increasing tracers such as the chlorofluorocarbons to determine the effective age empirically, even though it is an extremely poorly-conditioned problem to determine the entire trapping time distribution function by inversion of tracer concentrations. Much of the material used for this study was based on measurements made in Antarctica. (Auth. mod.)

41-2112
Frost effects in soils.
Van Vliet-Lanoë, B., Soils and Quaternary landscape evolution. Edited by J. Boardman, John Wiley and Sons, 1985, p.117-158, Refs. p.152-158.
Soil freezing, Freeze thaw cycles, Cryoturbation, Permafrost structure, Frost action, Climatic factors, Patterned ground, Ice lenses.

41-2113
Damage of concrete sleepers by calcium chloride.
Berntsson, L., et al, *Cement and concrete research*, 1982, Vol.12, p.87-92, 10 refs.
Chandra, S.
Concrete strength, Salting, Concrete durability, Chemical ice prevention, Damage, X ray diffraction, Spectroscopy, Corrosion.

41-2114
Record St. Clair River ice jam of 1984.
Derecki, J.A., et al, *Journal of hydraulic engineering*, Dec. 1986, 112(12), p.1182-1194, 4 refs.
Quinn, F.H.
Ice jams, River ice, Water flow, Ice conditions, Lake water, Water level, Computer applications.

41-2115
Behavior of laterally loaded piles in permafrost.
Neukirchner, R.J., et al, *Journal of geotechnical engineering*, Jan. 1987, 113(1), p.1-14, 13 refs.
Nixon, J.F.
Loads (forces), Pile load tests, Permafrost physics, Piles, Soil creep, Frozen ground mechanics, Ground thawing.

41-2116
Analysis of laterally loaded piles in permafrost.
Neukirchner, R.J., *Journal of geotechnical engineering*, Jan. 1987, 113(1), p.15-29, 8 refs.
Loads (forces), Pile load tests, Permafrost physics, Soil creep, Piles, Mathematical models, Frozen ground mechanics.

41-2117
Potential effects of acid rain on glaciated terrain.
Shilts, W.W., Groundwater as a geomorphic agent. Edited by R.G. LaFleur, Boston, Allen & Unwin, 1984, p.135-156, 16 refs.
Glacial deposits, Precipitation (meteorology), Chemical analysis, Water chemistry, Lacustrine deposits, Sediments, Glacial geology, Glacier flow.

41-2118
Karst groundwater activity and landform genesis in modern permafrost regions of Canada.
Ford, D.C., Groundwater as a geomorphic agent. Edited by R.G. LaFleur, Boston, Allen & Unwin, 1984, p.340-350, 22 refs.
Permafrost hydrology, Karst, Subglacial caves, Landforms, Glacier beds, Ground water, Canada.

41-2119
Bed topography inferred from airborne radio-echo sounding of Columbia Glacier, Alaska.
Brown, C.S., et al, *U.S. Geological Survey. Professional paper*, 1986, No.1258-G, 26p., 35 refs.
Rasmussen, L.A., Meier, M.F.
Glacier beds, Bottom topography, Radio echo soundings, Airborne radar, Topographic features, Charts, United States—Alaska—Columbia Glacier.

41-2120
Proceedings.
Offshore Technology Conference, 10th, Houston, Texas, May 8-10, 1978, 1978, 4 vols. (2653p.), Refs. passim. For selected papers see 41-2121 through 41-2128.
Offshore structures, Offshore drilling, Ice mechanics, Ice loads, Ice scoring, Meetings, Ice conditions, Icebergs, Oil spills.

41-2121
Effect of Prudhoe Bay crude oil on a tidal-flat ecosystem in Port Valdez, Alaska.
Naidu, A.S., et al, Offshore Technology Conference, 10th, Houston, Texas, May 8-10, 1978. Proceedings, Vol.1, 1978, p.97-104, 18 refs.
Feder, H.M., Norrell, S.A.
Oil spills, Marine biology, Ecosystems, Environmental impact, Sediments, Chemical analysis, United States—Alaska—Valdez.

41-2122
Drilling offshore western Greenland—ice.
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Finney, G.
Offshore drilling, Floating structures, Offshore structures, Icebergs, Ice conditions, Meteorological factors, Ships, Greenland.

41-2123
Case study: oil recovery beneath ice.
Allen, A.A., Offshore Technology Conference, 10th, Houston, Texas, May 8-10, 1978. Proceedings, Vol.1, 1978, p.261-266.
Oil recovery, Ice cover effect, Oil spills, Countermeasures, Subglacial observations, Temperature effects, Ice floes, Snow composition.

41-2124
Behavior of the *Bouchard* No.65 oil spill in the ice-covered waters of Buzzards Bay.
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Martin, S.
Oil spills, Ice conditions, Ice mechanics, Tidal currents, Distribution, Hummocks, United States—Massachusetts—Buzzards Bay.

41-2125
First offshore drilling in the Beaufort Sea.
Todd, M.B., Offshore Technology Conference, 10th, Houston, Texas, May 8-10, 1978. Proceedings, Vol.1, 1978, p.399-405.
Offshore drilling, Oil spills, Ice scoring, Design, Equipment, Countermeasures, Beaufort Sea.

41-2126
Design and construction of a caisson retained island drilling platform for the Beaufort Sea.
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Bruce, J.C.
Artificial islands, Caissons, Icebergs, Ice loads, Design criteria, Protection, Beaufort Sea.

41-2127
Quantitative study of slope instability in the Gulf of Alaska.
Hampton, M.A., et al, Offshore Technology Conference, 10th, Houston, Texas, May 8-10, 1978. Proceedings, Vol.4, 1978, p.2307-2318, 25 refs.
Slope stability, Bottom sediment, Marine geology, Engineering, Sliding, Ocean waves, United States—Alaska—Gulf of Alaska.

41-2128
Model study of iceberg scouring in North Atlantic.
Chari, T.R., et al, Offshore Technology Conference, 10th, Houston, Texas, May 8-10, 1978. Proceedings, Vol.4, 1978, p.2319-2326, 18 refs.
Guha, S.N.
Ice scoring, Icebergs, Ice loads, Ocean bottom, Offshore structures, Seasonal variations.

41-2129
Agenda and presentations.
Meeting of the Ice Research Laboratory, Thayer School of Engineering, Dartmouth College, Hanover, NH, 1st, Oct. 2 and 3, 1985, *Dartmouth College, Hanover, NH. Ice Research Laboratory. Report,* [1986], No.IRL 85/86-012, Var.p., Refs. passim.
For selected papers see 41-2130 through 41-2135.
Ice strength, Ice crystal structure, Ice solid interface, Grain size, Compressive properties, Tensile properties, Ice cracks, Ice friction, Meetings.

41-2130
Effects of loading history on the compressive strength of polycrystalline ice.
Haerle, R.N., *Dartmouth College, Hanover, NH. Ice Research Laboratory. Report,* [1986], No.IRL 85/86-012, c25p., Abstract and diagrams. 4 refs.
Ice strength, Loads (forces), Ice crystal structure, Ice creep, Stress strain diagrams, Compressive properties, Tests, Grain size, Temperature effects.

41-2131
Effect of a bimodal grain size distribution on the compressive strength of polycrystalline ice.
Laughlin, J.L., *Dartmouth College, Hanover, NH. Ice Research Laboratory. Report,* [1986], No.IRL 85/86-012, c17p., Abstract and graphs. 3 refs.
Ice strength, Ice crystal structure, Compressive properties, Grain size, Stresses, Particle size distribution, Strains.

41-2132
Tensile strength of ice with preexisting cracks.
Hoxie, S., *Dartmouth College, Hanover, NH. Ice Research Laboratory. Report,* [1986], No.IRL 85/86-012, 7p., Abstract and illus.
Ice strength, Ice cracks, Tensile properties, Stresses, Brittleness, Temperature effects, Compressive properties, Crack propagation.

41-2133
Observations of grain boundary sliding in ice bicrystals.
Graves, J.H., *Dartmouth College, Hanover, NH. Ice Research Laboratory. Report,* [1986], No.IRL 85/86-012, c12p., Abstract and illus.
Ice structure, Boundary layer, Grain size, Deformation, Sliding, Ice crystal structure, Tests, Loads (forces).

41-2134
Friction of solids on ice.
Huber, N.P., et al, *Dartmouth College, Hanover, NH. Ice Research Laboratory. Report,* [1986], No.IRL 85/86-012, MP 2179, 4p., Abstract and illus.
Itagaki, K., Kennedy, F.E., Jr.
Ice friction, Ice solid interface, Lubricants, Liquid phases, Ice melting, Pressure, Theories.

41-2135
Effects of rate, temperature, and microstructure on the fracture toughness of ice.
Nixon, W.A., *Dartmouth College, Hanover, NH. Ice Research Laboratory. Report,* [1986], No.IRL 85/86-012, 6p., Abstract and illus.
Ice cracks, Ice strength, Loads (forces), Grain size, Temperature effects, Microstructure.

41-2136
Low-temperature mechanical properties of asphalt concrete.
Kallas, B.F., *Asphalt Institute, College Park, MD. Research report,* Sep. 1982, RR-82-3, 53p., 14 refs.
Bituminous concretes, Mechanical properties, Concrete strength, Low temperature tests, Concrete aggregates, Stress strain diagrams, Cracking (fracturing), Tensile properties.

41-2137
Regionalization of winter low-flow characteristics of Tennessee streams.
Bingham, R.H., *U.S. Geological Survey. Water-resources investigations report,* 1986, No.86-4007, 88p. + 2 maps, 15 refs.
Stream flow, Water level, Surface drainage, Seasonal variations, Accuracy, United States—Tennessee.

41-2138
Retention and release of metals by soils—evaluation of several models.
Amacher, M.C., et al, *Geoderma,* Sep. 1986, 38(1-4), MP 2186, p.131-154, 24 refs.
Kotuby-Amacher, J., Selim, H.M., Iskandar, I.K.
Soil composition, Soil chemistry, Metals, Solutions, Models.
Several kinetic models, including irreversible and reversible 1st, 2nd, and *n*th order models, and several equilibrium models, including the linear, Langmuir, two-surface Langmuir, and Freundlich models, were evaluated for their ability to describe the retention/release of Cu, Cd, and Hg by various soils. The retention/release data were obtained using a batch reaction method. In general, no single-reaction kinetic model fit the data over the entire time and concentration ranges studied for any of the metals or soils. The relationship between the amount of metal retained by the soil and the concentration of metal in solution was described by either the two-surface Langmuir or Freundlich models. A significant fraction of the metals retained by the soil was not released to solution and was not exchangeable, indicating that some irreversible retention of the metals occurred. The results suggest that a multi-reaction model consisting of irreversible and reversible kinetic models is needed to fit all the data.

41-2139
Snow survey from meteorological satellite images in the Qilian Mountain basin in Northwest China.
Liu, Z.K., et al, *International journal of remote sensing,* Oct. 1986, 7(10), p.1335-1340, 4 refs.
Zheng, S.Y., Zeng, Q.Z.
Snow surveys, Snow cover distribution, Remote sensing, Runoff, China—Qilian Mountain.

41-2140
Illustration of the influence of shadowing on high latitude information derived from satellite imagery.
McGuffie, K., et al, *International journal of remote sensing,* Oct. 1986, 7(10), p.1359-1365, 9 refs.
Henderson-Sellers, A.
Ice surface, Snow surface, Remote sensing, Cloud cover, Visibility, Mapping.

41-2141
Wind and temperature regime along the slope of Adelie Land, Antarctica.
Kodama, Y., et al, *Journal of geophysical research,* May 20, 1986, 19(D6), p.6735-6741, 26 refs.
Wendler, G.
Weather stations, Remote sensing, Air temperature, Wind (meteorology), Antarctica—Adélie Coast.
An analysis was made of data collected from automatic weather stations (AWS) on the slope of Adelie Land. The data were collected simultaneously at different stations on the ice-covered slope of the continent, where no data have previously been obtained. The stations are classified into three groups according to their location (high plateau, intermediate plateau, or coastal region), each having distinct annual temperature and wind speed regimes. These classifications also correspond well to the stations' slopes. Change in surface air temperature along the slope with respect to height was smaller than -1 deg C/100 m between the high plateau and the intermediate plateau stations. The wind directions did not follow Ball's model, which suggests the importance of the gradient of surface potential air temperature along the slope on the wind regime. A scale analysis showed the condition in which the gradient of surface potential air temperature along the slope should not be considered negligible when considering the total pressure gradient force. This condition in turn indicates that the entrainment of momentum across the top of the katabatic wind layer is also important. (Auth.)

41-2142
Frost penetration effect on blasting parameters of seasonally freezing ground. [Vliianie glubiny promerzaniia na parametry vzryvnykh rabot v sezonnomerzlykh gruntakh],
Frash, G.B., et al, *Vzryvnoe delo,* 1986, No.88, p.55-59, In Russian. 2 refs.
Soil freezing, Frost penetration, Seasonal freeze thaw, Blasting.

41-2143
Railroad track control. [Kontrol' rel'sov],
Zarochentsev, G.V., ed, Moscow, Transport, 1986, 145p., For selected paper see 41-2144.
Icing, Railroad tracks, Railroads, Railroad cars, Countermeasures, Railroad equipment.

41-2144
Protecting searching devices of supersonic flaw-detection cars from icing. [Zashchita iskatel'nogo ustroĭstva ul'trazvukovogo vagona-defektoskopa ot obledeneniia],
Paulus, S.V., Kontrol' rel'sov (Railroad track control) edited by G.V. Zarochentsev, Moscow, Transport, 1986, p.121-125, In Russian.
Railroad tracks, Winter maintenance, Railroad equipment, Icing, Countermeasures.

41-2145
Problems of engineering glaciology. [Problemy inzhenernoĭ gliatsiologii],
Alekseev, V.R., ed, Novosibirsk, Nauka, 1986, 223p., In Russian. For individual papers see 41-2146 through 41-2182. Refs. passim.
Brines, Ice formation, Ice physics, Ice deterioration, Artificial ice, Ice roads, Ice crossings, Dust control, Water, Supercooling, Freezing points.

41-2146
Kinetics and mechanism of homogeneous crystallization of water. [Kinetika i mekhanizm gomogennoĭ kristallizatsii vody],
Golubev, V.N., Problemy inzhenernoĭ gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.5-10, 15 refs., In Russian.
Ice nuclei, Ice formation, Ice crystal growth, Ice physics, Molecular structure, Water, Supercooling, Freezing points.

41-2147
Convective heat- and mass transfer between artificial ice and the atmosphere. [O konvektivnom teplo- i massoobmene iskusstvennogo l'da s atmosferoĭ],
Likhtenshteĭn, E.L., Problemy inzhenernoĭ gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.10-16, 5 refs., In Russian.
Ice surface, Artificial ice, Mathematical models, Ice air interface, Design, Heat transfer, Mass transfer.

41-2148
Crystallization of motionless supercooled water. [Osobennosti kristallizatsii nepodvizhnoĭ pereokhlazhdennoĭ vody],
Smorygin, G.I., Problemy inzhenernoĭ gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.16-23, 6 refs., In Russian.
Ice nuclei, Supercooled clouds, Water temperature, Ice crystal growth, Phase transformations, Supercooling, Analysis (mathematics), Physical properties.

41-2149
Electromagnetic processes accompanying water crystallization and ice deterioration. [Elektromagnitnye protsessy pri kristallizatsii vody i razrushenii l'da],
Berri, B.L., et al, Problemy inzhenernoĭ gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.24-32, 26 refs., In Russian.
Ice formation, Ice deterioration, Ice physics, Dielectric properties, Radiation.

41-2150
Solubility of ice in frozen ground induced by salt solutions. [Rastvorimost' l'da v merzlykh gruntakh pod vozdeistviem solevykh rastvorov],
Gaidaenko, E.I., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.32-36, 5 refs., In Russian
Ground ice, Frozen ground, Saline soils, Solubility.

41-2151
Technical means for thermal drilling and cutting of ice. [Tekhnicheskie sredstva dlia teplovogo bureniia i rezaniia l'da],
Morev, V.A., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.37-39, 3 refs., In Russian.
Toskin, V.V., IAkovlev, V.M.
Ice shelves, Thermal drills, Ice cutting, Polar regions.

41-2152
Dynamics of temperature fields during accretion of floating ice. [Dinamika temperaturnykh polei pri narastanii plavuchego l'da],
Bondarev, E.A., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.39-42, 5 refs., In Russian.
Vasil'ev, V.I., Faĭko, L.I.
Ice floes, Ice accretion, Ice water interface, Ice cover thickness, Stefan problem, Heat transfer.

41-2153
Methods and equipment for obtaining artificial snow (granulated ice). [Metody i ustroĭstva dlia polucheniia iskusstvennogo snega (granulirovannogo l'da)],
Smorygin, G.I., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.43-59, 15 refs., In Russian.
Petrenko, N.R.
Artificial ice, Artificial snow, Dispersions, Water, Air temperature, Supercooling, Ice makers, Tests, Compressed air.

41-2154
Theory and practice of the spray-cone ice formation technique. [Metod fakel'nogo l'doobrazovaniia: zadachi teorii i praktiki],
Khodakov, V.G., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.60-66, 13 refs., In Russian.
Sosnovskiĭ, A.V.
Ice makers, Ice formation, Artificial ice, Ice crossings, Equipment, Mathematical models, Manufacturing.

41-2155
Scientific basis for the processes of upbuilding frozen water-ice foams on ground and their practical application. [Nauchnye osnovy protsessa namorazhivaniia vodno-vozdushnykh pen na grunt i ikh prakticheskaia realizatsiia],
Levinskiĭ, B.V., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.66-72, 4 refs., In Russian.
Piatakov, V.G., Safonov, V.F.
Soil freezing, Stefan problem, Ice makers, Thermal insulation, Artificial ice, Design.

41-2156
Evaluating production efficiency of pneumohydraulic sprayers of snow-producing equipment. [Otsenka snegoproizvoditel'nosti pnevmogidravlicheskikh forsunok snegovogo generatora],
Ivanov, I.I., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.72-77, 7 refs., In Russian.
Ice makers, Artificial ice, Equipment, Design.

41-2157
Testing the experimental assembly for manufacturing artificial snow on dredge proving-grounds. [Ispytaniia eksperimental'noi ustanovki dlia polucheniia iskusstvennogo snega na drazhnom poligone],
Petrenko, N.R., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.78-80, In Russian.
Artificial snow, Equipment, Tests, Experimentation.

41-2158
Methods of building temporary structures from unconsolidated snow. [Metody sozdaniia vremennykh iskusstvennykh sooruzhenii iz rykhlogo snega],
Komarov, A.A., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.80-84, 2 refs., In Russian.
Shelters, Snow (construction material), Snow compaction, Snow compression, Military engineering.

41-2159
Methods of making artificial snow and its physical properties. [Protsessy polucheniia iskusstvennogo snega i ego fizicheskie svoĭstva],
Mekhov, K.S., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.84-87, 3 refs., In Russian.
Artificial snow, Snow manufacturing, Snow compaction, Snow (construction material), Snow physics.

41-2160
Process of hard snow formation on East Siberian roads. [Mekhanizm protsessa formirovaniia snezhnogo nakata na avtomobil'nykh dorogakh Vostochnoi Sibiri],
Maevskiĭ, A.A., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.87-92, 6 refs., In Russian.
Roads, Snow accumulation, Snow compaction, Ice formation, Metamorphism (snow), Mathematical models, Winter maintenance.

41-2161
Studying the technology of building moorings of sea-water ice. [Issledovanie tekhnologii vozvedeniia ledianykh prichal'nykh sooruzhenĭ iz morskoĭ vody],
Ivanova, E.L., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.92-94, 5 refs., In Russian.
Foundations, Sea water freezing, Ice (construction material), Moorings, Artificial ice, Construction equipment, Desalting, Hydraulic structures, Dams, Ice strength, Porosity.

41-2162
Snow as construction material (bibliographic review of Russian and foreign publications. [Sneg kak stroitel'nyĭ material (obzor otechestvennoĭ i zarubezhnoĭ literatury)],
Kvon, IA.D., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.95-105, 43 refs., In Russian.
Bibliographies, Snow (construction material), Snow mechanics, Snow physics, Models, Snow strength, Snow compression, Snow density, Snow hardness, Measuring instruments.

41-2163
Metamorphism and thermophysical properties of friable ice. [Metamorfizm i teplofizicheskie svoĭstva l'da rykhloĭ struktury],
Smorygin, G.I., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.106-121, 17 refs., In Russian.
Ice crystals, Ice formation, Ice structure, Artificial ice, Ice surface, Porosity, Ice models.

41-2164
Forecasting the conditions of formation, structure and strength of ice covers on surfaces of solid bodies. [Prognozirovanie usloviĭ vozniknoveniia, struktury i prochnosti ledianykh pokrytiĭ na poverkhnosti tverdykh tel],
Golubev, V.N., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.121-128, 10 refs., In Russian.
Icing, Glaze, Ice nuclei, Ice formation, Supercooled clouds, Water, Supercooling.

41-2165
Strength of granular ice. [Prochnost' granulirovannogo l'da],
Deriugin, A.G., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.129-134, 13 refs., In Russian.
Kalinina, G.N., Lobashov, V.M.
Ice structure, Ice strength, Artificial ice, Ice (construction material), Ice crossings, Hydraulic structures.

41-2166
Strength of reinforced-ice materials. [O prochnosti ledianykh kompozitnykh materialov],
Deriugin, A.G., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.135-139, 8 refs., In Russian.
Kalinina, G.N., Lobashov, V.M.
Ice (construction material), Ice strength, Artificial ice.

41-2167
Conditions of upbuilding and properties of artificial sea-water ice. [Usloviia namorazhivaniia i svoĭstva iskusstvennogo l'da iz morskoĭ vody],
Gagarin, V.E., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.140-146, In Russian.
Pizhankov, N.M.
Ice shelves, Sea water freezing, Artificial ice, Engineering geology, Glaciology, Economic development, Arctic Ocean.

41-2168
Trafficability of snow cover by wheeled vehicles from experimental data. [Prokhodimost' snezhnogo pokrova kolesnymi mashinami (po eksperimental'nym dannym)],
Ioffe, D.IA., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.146-153, 9 refs., In Russian.
Samoĭlov, R.S., Ushakov, A.I.
Slopes, Snow depth, Snow strength, Snow surveys, Vehicle wheels, Trafficability, Tests, Plains.

41-2169
Glacial and thermal processes originating during sea-ice and fresh-water interactions and their effect on mechanical properties of ice. [Ledotermicheskie protsessy pri vzaimodeĭstvii morskogo l'da i presnoi vody i ikh vliianie na mekhanicheskie svoĭstva l'da],
Tregub, G.A., et al, Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p. [illegible] refs., In Russian.
Monosov, L.M.
Ice crossings, Ice jams, Sea ice, River flow, Hydraulic structures, Ice dams, Estuaries, Ice melting, Ice physics, Analysis (mathematics).

41-2170
Broadening the application area of ice and snow as construction materials. [Zadachi rasshireniia oblasti ispol'zovaniia l'da i snega v kachestve stroitel'nykh materialov],
Voĭtkovskiĭ, K.F., Problemy inzhenernoi gliatsiologii (Problems of engineering glaciology) edited by V.R. Alekseev, Novosibirsk, Nauka, 1986, p.159-162, In Russian.
Ice (construction material), Ice strength, Ice thermal properties, Rheology.

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Utilization of the two-wave NNSS receiver drastically improved the positioning accuracy on the ice sheet, giving 3 m three-dimensional convergence with 25 accepted satellite passes, and is most useful for the measurement of ice flow velocity. The flow velocity vectors along Route S-H-Z on Mizuho Plateau were obtained by estimating positional change of glaciological traverse stations after 7 years' interval. The obtained flow velocity is 15 m/a at H17 around 1000 m a.s.l. and 70 m/a at Z2 around 2000 m a.s.l. The obtained velocity vectors are found to be mostly parallel to the maximum slope of the free-air gravity anomaly contours and can be interpreted as the ice sheet sliding down the slope of the subglacial mound of 2400 m relative height from the average subglacial bedrock topography. If such bedrock sliding occurs over the whole region of Mizuho Plateau, the related thinning of the ice sheet may be detected by the precise measurement of the height change of the same marker station. By dynamically modeling the ice sheet and substituting the observed parameters such as precipitation, principal strain rate, etc., into the equation of ice thickness change, a submergence velocity of around -1 m/a is expected and will be detected by carefully designed repetitive NNSS receiving experiments after several years' interval. (Auth. mod.)

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To develop a unified method for parameterizing the turbulent transfer from open water surrounded by pack ice, a reanalysis has been made of data reported in the literature on momentum and heat transfer over Arctic leads and polynyas. The neutral stability value of the 10-m drag coefficient, 1.49 X .001, is independent of wind speed and open-water fetch for winds from 1 to 10 m/s and fetches from 7 to 500 m. The neutral stability value of the 10-m transfer coefficient for sensible heat, C_HN10, is parameterized with the nondimensional fetch. No compelling reason was found to believe that the bulk transfer coefficient for latent heat is different from C_HN10 which implies that horizontal homogeneity may not be a severe constraint for evaluating scalar transfer coefficients. The bulk transfer coefficients actually used in modeling turbulent transfer over leads and polynyas are derivable if the atmospheric stability is known. Lastly, a simple formula is developed for estimating one of the fetch factors from an easily obtainable bulk Richardson number (Auth. mod.)

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For the past 25 years the study of ice cores for potential insights into the history of the atmosperic CO2 concentration has received great attention from scientists interested in the reconstruction of environmental parameters. Deep ice cores from Greenland and Antarctica, which are continuous sequences of generally high-quality samples formed during the last 100,000 and 50,000 years, respectively, were available for study. Research has led to new techniques for extracting gases from ice and to recent developments of sensitive and accurate techniques for the analysis of gas. In this chapter the state of the art of this research is described. A crucial question relates to the occlusion of air in ice and to possible mechanisms leading to deviations of the gas composition of the trapped air from that of the atmosphere at the time of ice formation and during the long storage time of the air bubbles in the surrounding ice matrix. In examining these processes some of the significant factors considered are: history of the method of reconstructing atmospheric gas composition; trapping of air in natural ice; interactions between air in bubbles and surrounding ice; preindustrial atmospheric ice; CO2 sources and sinks and CO2 warming; natural regulation of atmospheric CO2 concentration; climate impact of past atmospheric CO2; and isotopic CO2 variations. (Auth. mod.)

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The coastal regions of Antarctica, where substantial deposits of oil and other minerals are reported, consist of a number of ice shelves. Such areas encounter severe weather conditions and flow of the ice shelf, which severely affect the life of the structure/installations. The Indian Antarctic station Dakshin Gangotri, located in East Antarctica at 70 S 12 deg 05' E, lies on one such ice shelf. The paper brings out the criteria which should be kept in mind while selecting the site of a structure on an ice shelf and reports a case study for selection of a site for the Indian research station Dakshin Gangotri in Dec. 1983 in which the author was involved as the leader of the first wintering party

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Ice crystal structure, Ice electrical properties, Microwaves, Sea ice, Ice salinity, Dielectric properties, Ice physics.
The crystalline structure, salinity characteristics, and microwave dielectric properties of artificially grown saline ice are presented. The ice was grown in an outdoor pool containing salt water of 23-25 per mill salinity. The structure and salinity profiles of this ice sheet closely simulated those found in arctic first-year sea ice. The complex relative dielectric permittivity of slabs removed from the ice sheet was measured at 4.75 GHz as a function of temperature. The slabs were placed between open-end waveguide radiators, and dielectric properties were calculated from the forward scattering coefficient. The results show both the real and imaginary parts to vary almost in direct proportion to the brine volume with values for imaginary showing more variation, and are compared with the previous work of others on actual sea ice samples.

41-2298
Passive microwave spectral emission form saline ice at C-band during the growth phase.
Swift, C.T., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1986, GE-24(6) (Special issue), International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. [Proceedings], p.840-848, 4 refs.
Dehority, D.C., Tanner, A.B., McIntosh, R.E.
Ice optics, Ice salinity, Microwaves, Ice temperature, Spectra, Ice growth, Analysis (mathematics), Ice cover thickness, Measuring instruments.

41-2299
Extracting sea ice data from satellite SAR imagery.
Fily, M., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1986, GE-24(6) (Special issue), International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. [Proceedings], p.849-854, 11 refs. For another source see 40-416.
Rothrock, D.A.
Sea ice distribution, Remote sensing, Ice conditions, Brightness.

41-2300
Retrieval of the water equivalent of snow cover in Finland by satellite microwave radiometry.
Hallikainen, M.T., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1986, GE-24(6) (Special issue), International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct 7-9, 1985. [Proceedings], p.855-862, 22 refs.
Jolma, P.A.
Snow water equivalent, Remote sensing, Microwaves, Radiometry, Snow depth, Soil temperature, Freeze thaw cycles.

41-2301
Scattering from a layered medium connected with rough interfaces: matrix doubling method.
Eom, H.J., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1986, GE-24(6) (Special issue), International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. [Proceedings], p.937-939, 8 refs.
Boerner, W.-M.
Remote sensing, Snow water content, Sea ice, Microwaves, Scattering, Boundary layer, Roughness.

41-2302
Ground-based detection of aircraft icing conditions using microwave radiometers.
Popa Fotino, I.A., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1986, GE-24(6) (Special issue), International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct 7-9, 1985. [Proceedings], p.975-982, 5 refs.
Schroeder, J.A., Decker, M.T.
Aircraft icing, Ice detection, Microwaves, Radiometry, Remote sensing, Air temperature, Unfrozen water content.

41-2303
Large-area deterministic simulation of natural runoff from snowmelt based on Landsat MSS data.
Baumgartner, M.F., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1986, GE-24(6) (Special issue), International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. [Proceedings], p.1013-1017, 14 refs.
Martinec, J., Seidel, K.
Runoff, Snowmelt, Remote sensing, Snow cover distribution, Stream flow, LANDSAT, Seasonal variations, Models.

41-2304
Methods of forest interpretation on texture-selective images. [Razrabotka metodiki deshifrirovaniia lesov na strukturozonal'nykh snimkakh],
Kravtsova, V.I., *Issledovanie Zemli iz kosmosa*, Sep.-Oct. 1986, No.5, p.55-66, In Russian with English summary. 4 refs.
Forest land, Forest soils, Remote sensing, Spaceborne photography, Forest fires, Geobotanical interpretation, Alassy.

41-2305
Self-organization of glacial relief. [Samoorganizatsiia lednikovogo rel'efa],
Mazo, V.L., *Akademiia nauk SSSR. Doklady*, 1986, 290(2), p.309-312, In Russian. 15 refs.
Glacier beds, Bottom topography, Glacial erosion, Glacier flow, Glacier ice, Mountain glaciers, Polar regions.

41-2306
Evaluating the solutions of nonlinear problems on freezing and thawing of moist ground. [Otsenki reshenii nelinelnykh zadach promerzaniia-ottaivaniia vlazhnykh gruntov],
Danielian, IU.S., et al, *Akademiia nauk SSSR. Doklady*, 1986, 290(2), p.350-353, In Russian. 7 refs.
Aksenov, V.G.
Soil water, Moisture transfer, Frost penetration, Freeze thaw cycles, Engineering geology, Phase transformations, Mathematical models.

41-2307
Chronostratigraphy of syngenetic permafrost deposits by oxygen-isotope analysis. [Stratigraficheskoe raschlenenie singeneticheskikh mnogoletnemerzlykh otlozhenii s pomoshch'iu izotopno-kislorodnogo analiza],
Arkhangelov, A.A., et al, *Akademiia nauk SSSR. Doklady*, 1986, 290(2), p.415-417, In Russian. 5 refs.
Permafrost structure, Ground ice, Isotope analysis, Oxygen isotopes, Stratigraphy, Ice dating.

41-2308
Project of an inhabited lunar base. [Proekt obitaemoi bazy na Lune],
Shevchenko, V.V., *Akademiia nauk SSSR. Vestnik*, 1986, No.10, p.85-98, In Russian.
Moon, Water, Rocks, Oxygen, Composition, Planetary environments, Hydrogen, Natural resources.

41-2309
Acoustic emission study on multi-year sea ice in an arctic field laboratory.
Sinha, N.K., *Journal of acoustic emission*, Apr.-Sep. 1985, 4(2-3), International conference on acoustic emission, 2nd. Lake Tahoe, Nevada, Oct 28-Nov. 1, 1985. [Preprints], p.S290-S293, 3 refs.
Ice acoustics, Ice cracks, Cracking (fracturing), Sea ice, Compressive properties.

41-2310
Focus on snow and ice control. *Better roads*, Oct. 1986, 56(10), p.30-31.
Snow removal, Ice control, Road icing, Blowing snow, Winter maintenance, Road maintenance.

41-2311
Acid surge in a well-buffered stream.
Jacks, G., et al, *Ambio*, 1986, 15(5), p.282-285, 19 refs.
Olofsson, E., Werme, G.
Snowmelt, Water chemistry.

41-2312
Development of high strength welding materials for low temperature service.
Nakanishi, M., et al, *Sumitomo search*, May 1986, No.32, p.97-105, 2 refs.
Katsumoto, N., Kawai, K., Tsumura, H.
Welding.

41-2313
Dielectric properties of snow in the 3 to 37 GHz range.
Hallikainen, M.T., et al, *IEEE transactions on antennas and propagation*, Nov. 1986, AP-34(11), p.1329-1340, 29 refs.
Ulaby, F.T., Abdelrazik, M.
Snow electrical properties, Dielectric properties, Wet snow, Snow water content.

41-2314
Numerical modeling of optically significant characteristics of falling snow.
Martinez-Sanchez, M., et al, *Optical engineering*, Jan.-Feb. 1983, 22(1), p.78-85, 12 refs.
Yousefian, V., Dvore, D., Vaglio-Lauren, R.
Snowfall, Snow optics, Attenuation, Visibility, Cloud physics.

41-2315
Scattering corrections to extinction coefficients measured in falling snow.
Winchester, L.W., Jr., et al, *Optical engineering*, Jan.-Feb. 1983, 22(1), p.86-89, 7 refs.
Gimmestad, G.G.
Snowfall, Attenuation, Light scattering, Light transmission.

41-2316
Visible and infrared transmission through snow.
Seagraves, M.A., et al, *Optical engineering*, Jan.-Feb. 1983, 22(1), p.90-93, 14 refs.
Ebersole, J.F.
Snowfall, Light transmission, Attenuation, Aerosols.

41-2317
Obscuration by helicopter-produced snow clouds.
Ebersole, J.F., *Optical engineering*, Jan.-Feb. 1983, 22(1), p.94-99, 15 refs.
Snowfall, Clouds (meteorology), Attenuation, Light transmission, Helicopters.

41-2318
Electronic structure of hydrogen-bonded H2O.
Schmeisser, D., et al, *Physical review B*, Mar. 1983, 27(6), p.3279-3286, 27 refs.
Water, Molecular structure, Hydrogen bonds.

41-2319
SSDC/MAT--an international operation. *Arctic petroleum review*, Winter 1986/87, 9(2), p.3-5, 3 refs.
Offshore structures, Offshore drilling, Ice loads, Dredging, Loading, Design, Beaufort Sea.

41-2320
PCSP's floating research station. *Arctic petroleum review*, Winter 1986/87, 9(2), p.6, 5 refs.
Drift stations, Ice islands, Floating structures, Floating ice.

41-2321
Deformation of a pipeline by frost heave. *Arctic petroleum review*, Winter 1986/87, 9(2), p.10.
Underground pipelines, Frost action, Frost heave, Deformation, Frozen ground mechanics, Tests.

41-2322
Strong fluctuation theory for moist granular media.
Stogryn, A., *IEEE transactions on geoscience and remote sensing*, Mar. 1985, GE-23(2), p.78-83, 12 refs.
Wet snow, Remote sensing, Ice electrical properties, Snow electrical properties, Soil water, Soil physics, Moisture, Microwaves, Snow density, Dielectric properties, Analysis (mathematics), Grain size, Water films.

41-2323
Field measurements of soil thermal conductivity.
Goodrich, L.E., *Canadian geotechnical journal*, Feb. 1986, 23(1), p.51-59, With French summary. 6 refs.
Permafrost thermal properties, Thermal conductivity, Heat capacity, Clays, Peat, Latent heat, Seasonal variations.

41-2324
Problems of drainage and winter service in noise-diminishing road surfaces. [Probleme der Entwässerung und des Winterdienstes bei lärmmindernden Strassendecken],
Popp, C., *Strasse und Autobahn*, Dec. 1986, 37(12), p.536-540, In German.
Winter maintenance Road maintenance, Drainage, Chemical ice prevention, Noise (sound), Salting, Countermeasures.

41-2325
Studies on the residual effects of de-icing salts. [Untersuchungen zur Wirkungsdauer von Tausalzen],
Kutter, M., et al, *Strassen- und Tiefbau*, Nov. 1986, 40(11), p.5-12, In German with English summary, p.3. 11 refs.
Moritz, K., Pohle, G.
Soil pollution, Chemical ice prevention, Vegetation, Road icing, Salting.

41-2326
Units and vehicles for spreading de-icing agents. [Maschinen und Fahrzeuge für den Winterdienst—die Streuer],
Kotte, G., *Strassen- und Tiefbau*, Nov. 1986, 40(11), p.12-16, In German with English summary, p.3.
Ice removal, Snow removal, Equipment, Sanding, Salting, Winter maintenance, Road maintenance, Chemical ice prevention.

41-2327
Observations of internal gravity waves under the Arctic pack ice.
Levine, M.D., et al, *Journal of geophysical research*, Jan. 15, 1987, 92(C1), p.779-782, 29 refs.
Paulson, C.A.
Wave propagation, Ocean waves, Pack ice, Buoyancy.

41-2328
Users manual for a polar ice forecast subsystem—Arctic.
Harr, P.A., *U.S. Naval Ocean Research and Development Activity. Polar Oceanography Branch. Technical note*, Oct. 1981, No.121, 18p., ADA-114 351, 2 refs.
Ice forecasting, Ice conditions, Sea ice distribution, Ice models, Mathematical models, Manuals, Arctic Ocean.

41-2329
Decelerating force due to flexural and gravitational waves radiated by a load moving on ice.
Gushchin, V.V., et al, *Akademiia nauk SSSR. Izvestiya. Physics of the solid Earth*, 1985, 21(5), p.385-387, Translated from its Izvestiia. Fizika Zemli. 3 refs.
Zaslavskiĭ, IU.M., Krysov, S.V.
Water waves, Ice floes, Dynamic loads, Plates, Analysis (mathematics), Vehicles.

41-2330
Formation of a microscopic ice filament in an electric field.
Aksiutova, L.K., et al, *Soviet technical physics letters*, Dec. 1985, 11(12), p.619-620, Translated from Pis'ma v zhurnal tekhnicheskoĭ fiziki Dec. 1985.
Bedrin, A.G., Podmoshenskiĭ, I.V., Rogovtsev, P.N.
Aerosols, Ice nuclei, Ice formation, Supercooled fog, Electric fields, Electric charge, Experimentation.

41-2331
Short report on the piled-rock type wind hole at Soünzan and ice accretion mechanism.
Fujiwhara, S., *Geophysical magazine*, Mar. 1986, 41(4), p.261-266, With Japanese summary. 3 refs.
Ice accretion, Caves.

41-2332
Underwater noise due to rain, hail, and snow.
Scrimger, J.A., et al, *Acoustical society of America. Journal*, Jan. 1987, 81(1), p.79-86, 16 refs.
Underwater acoustics, Noise (sound).

41-2333
Effect of natural convection on ice crystal growth rates in salt solutions.
Huang, J.S., et al, *A.I.Ch.E. journal*, May 1985, 31(5), p.747-752, 14 refs.
Barduhn, A.J.
Ice crystal growth, Solutions, Convection, Salt water, Thermal effects, Liquid cooling.

41-2334
Molecular-packing analysis of the crystal structures of ice.
Hall, D., et al, *Acta crystallographica*, 1985, B41, p.169-172, 22 refs.
Wood, M.K.
Ice crystal structure, Molecular structure, Phase transformations, High pressure ice, Enthalpy, Ice sublimation, Temperature effects.

41-2335
Periglacial environments.
Walker, H.J., Handbook of engineering geomorphology. Edited by P.G. Fookes and P.R. Vaughan, New York, Chapman and Hall, 1986, p.82-96, 29 refs.
Periglacial processes, Frost action, Permafrost physics, Ground ice, Engineering, Cracking (fracturing), Ice wedges, Frost mounds, Thermokarst.

41-2336
Results and statistical analysis of ice load measurements on board icebreaker *Sisu* in winters 1979 to 1985.
Kujala, P., et al, *Styrelsen för vintersjöfartsforskning. Research report*, 1986, No.43, 52p. + appends., 9 refs.
Vuorio, J.
Ice loads, Icebreakers, Ice conditions, Ice navigation, Measuring instruments, Ice cover thickness, Statistical analysis, Models.

41-2337
Antarctic ice charts 1983-1984.
U.S. Naval Polar Oceanography Center, Washington, D.C., 1985, 125p. ADA-159 907.
Ice conditions, Sea ice distribution, Maps, Seasonal variations.
This publication is the sixth in a continuing bi-yearly series of antarctic sea ice atlases prepared in the Joint Ice Center at the Naval Polar Oceanography Center, Suitland. The Atlas contains weekly charts depicting Southern Hemisphere ice conditions and extents. The information presented was prepared principally from satellite imagery supplemented by conventional observations. Table 1, located on the inside back cover, summarizes satellite data availability for 1983 and 1984.

41-2338
Observing the polar regions from space.
Thomas, R.H., *International Society for Optical Engineering. Proceedings*, 1984, Vol.481, p.165-171, 10 refs.
DLC G70.4.R43
Sea ice, Ice sheets, Topographic features, Remote sensing.
Satellite remote sensing gives information on many aspects of the ice cover; sea-ice extent and physical characteristics; detailed images of ice floes and open-water leads within the ice pack; sea-ice movement; zones of summer melting and snow-accumulation rates on the continental ice sheets; accurate estimates of ice-surface elevation, and detection of zones on the ice sheet that are either thickening or thinning, accurate, all-weather mapping of ice coastlines and large crevasses, and estimates of ice discharge rates from the ice sheets. The type of instrumentation used is briefly discussed and some sample records are shown. (Auth. mod.)

41-2339
German automatic weather stations in the Arctic 1942-1945.
Selinger, F., *Polar geography and geology*, Apr.-June 1986, 10(2), p.89-104, For German original see 40-2958. 16 refs.
Weather stations, Remote sensing, Polar regions, Military equipment.

41-2340
Geomorphology of river deltas on the Arctic coast of Siberia.
Korotaev, V.N., *Polar geography and geology*, Apr.-June 1986, 10(2), p.139-147, For Russian original see 40-2789. 7 refs.
Estuaries, Coastal topographic features, Permafrost beneath rivers, Arctic Ocean.

41-2341
Primary succession in Arctic tundra on the west coast of Spitsbergen (Svalbard).
Tishkov, A.A., *Polar geography and geology*, Apr.-June 1986, 10(2), p.148-156, For Russian original see 41-1820. 22 refs.
Tundra, Vegetation, Plant ecology, Plant physiology, Swamps, Ecosystems, Soil profiles, Arctic landscapes.

41-2342
Decrease in glacier cover on the islands of the Eurasian Arctic during the 20th Century.
Koriakin, V.S., *Polar geography and geology*, Apr.-June 1986, 10(2), p.157-165, For Russian original see 40-3914. 6 refs.
Glacier melting, Spaceborne photography, Glacier oscillation, Mountain glaciers.

41-2343
Glacier systems in the Soviet northeast.
Krenke, A.N., et al, *Polar geography and geology*, July-Sep. 1980, 4(3), p.166-185, For Russian original see 35-1532. Refs. p.183-185.
Chernova, L.P.
Mountain glaciers, Snow cover distribution, Alimentation, Glacier ablation.

41-2344
Vegetation changes in the Samotlor swamp (West Siberia) under the influence of engineering projects.
Polkoshnikova, O.V., et al, *Polar geography and geology*, July-Sep. 1982, 6(3), p.198-209, For Russian original see Akademiia Nauk SSSR, Izvestiia, Seriia geograficheskaia, 1981, No.4, p47-56. 9 refs.
Sushchenia, V.A.
Swamps, Petroleum products, Pollution, Transportation, Engineering.

41-2345
Kologriv forest (ecological investigations). [Kologrivskiĭ les (ekologicheskie issledovaniia)],
Sokolov, V.E., ed, Moscow, Nauka, 1986, 126p., In Russian. For selected papers see 41-2346 through 41-2348. Refs. passim.
Taiga, Cryogenic soils, Seasonal freeze thaw, Plant ecology, Plant physiology, Ecosystems, Soil composition, Radiation balance, Heat balance.

41-2346
Structure of the basic spruce forest in southern taiga. [O strukture korennogo tipa elovogo lesa iuzhnoĭ taĭgi],
Dylis, N.V., et al, Kologrivskiĭ les (ekologicheskie issledovaniia) (Kologriv forest (ecological investigations)) edited by V.E. Sokolov, Moscow, Nauka, 1986, p.6-22, In Russian.
Prokuronov, I.B.
Taiga, Plant physiology, Roots, Forest soils, Soil composition, Vegetation, Vegetation patterns.

41-2347
Estimating chemical composition of vegetation, soils and natural waters in the central and southern taiga. [Otsenka khimicheskogo sostava rastitel'nosti pochv i prirodnykh vod srednet i iuzhnoĭ taĭgi],
Stepanov, A.M., et al, Kologrivskiĭ les (ekologicheskie issledovaniia) (Kologriv forest (ecological investigations)) edited by V.E. Sokolov, Moscow, Nauka, 1986, p.64-72, In Russian.
Bugrovskiĭ, V.V., Golenetskiĭ, S.P., Sukhanova, N.I.
Plant ecology, Soil composition, Water table, Plant physiology, Water chemistry, Snow composition, Snow cover distribution, Chemical composition.

41-2348
Structure of the radiation and heat balance in Kologriv forest. [Struktura radiatsionnogo i teplovogo balansa Kologrivskogo lesa],
Rudnev, N.I., Kologrivskiĭ les (ekologicheskie issledovaniia) (Kologriv forest (ecological investigations)) edited by V.E. Sokolov, Moscow, Nauka, 1986, p.72-87, In Russian.
Taiga, Human factors, Plant physiology, Ecosystems, Radiation balance, Heat balance, Soil temperature, Frost penetration, Seasonal freeze thaw.

41-2349
Cryolithozone of central Asia. [Kriolitozona Tsentral'no-aziatskogo regiona],
Gorbunov, A.P., Yakutsk, 1986, 57p., In Russian with English table of contents enclosed. Refs. p.54-56.
Altitude, Alpine landscapes, Geocryology, Permafrost distribution, Frozen rock temperature, Permafrost origin, Permafrost hydrology, Glacier ice, Rock glaciers, Thermokarst, Geomorphology, Climatic factors.

41-2350
Single-phase Stefan problem accounting for the movement of a medium in liquid phase. [Odnofaznaia zadacha Stefana s uchetom dvizheniia sredy v zhidkoĭ faze],
Kulagina, N.A., *Akademiia Nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Sbornik nauchnykh trudov*, 1985, Vol.72, p.36-49, In Russian. 3 refs.
Stefan problem, Mathematical models, Liquids, Fluid flow, Liquid phases.

41-2351
Self-simulating multivariate Stefan problem. [Avtomodel'naia mnogomernaia zadacha Stefana],
Shmarev, S.I., *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Sbornik nauchnykh trudov*, 1986, Vol.74, p.126-146, In Russian. 9 refs.
Stefan problem, Mathematical models, Phase transformations, Melting, Liquid solid interfaces, Heat transfer.

41-2352
Age and evolution of soils in the USSR. [Evoliutsiia i vozrast pochv SSSR],
Ivanov, I.V., ed, Pushchino, 1986, 230p., In Russian. For selected papers see 41-2353 and 41-2354. Refs. passim.
Cryogenic soils, Soil profiles, Soil formation, Permafrost origin, Tundra, Continuous permafrost, Organic soils, Peat, Soil composition.

41-2353
Modern concept of soil cryogenesis, the evolution of cryogenic soils in Holocene and problems of land reclamation in the presence of permafrost. [Sovremennaia kontseptsiia pochvennogo kriogeneza, evoliutsiia kriogennykh pochv v golotsene i problemy melioratsii pochv s merzlotoĭ v profile],
Makeev, O.V., Evoliutsiia i vozrast pochv SSSR (Age and evolution of soils in the USSR) edited by I.V. Ivanov, Pushchino, 1986, p.37-46, In Russian. 5 refs.
Cryogenic soils, Soil profiles, Soil formation, Permafrost origin, Land reclamation.

41-2354
Buried soils of northeastern Yakutia (the Khallerchinskaya tundra). [Pogrebennye pochvy severo-vostoka IAkutii (Khallerchinskaia tundra)],
Fominykh, L.A., et al, Evoliutsiia i vozrast pochv SSSR (Age and evolution of soils in the USSR) edited by I.V. Ivanov, Pushchino, 1986, p.109-120, In Russian. 3 refs.
Kudriavtseva, N.N., Gubin, S.V., Gilichinskiĭ, D.A.
Tundra, Soil profiles, Continuous permafrost, Cryogenic soils, Organic soils, Peat, Polygonal topography, Soil composition, Vegetation.

41-2355
Borehole gas sampler for determining absolute age of ice by carbon isotope analysis. [Skvazhinnyĭ gazovyĭ probootbornik dlia izucheniia absoliutnogo vozrasta ledovykh tolshch s pomoshch'iu izotopnogo uglerodnogo analiza],
Zemtsov, A.A., et al, *Antarktika; doklady komissii*, 1984, No.23, p.72-78, In Russian. 4 refs.
Kudriashov, B.B., Chistiakov, V.K., Shkurko, A.M.
DLC G576.A65
Boreholes, Measuring instruments, Ice dating, Carbon isotopes, Glacier ice.
Field work and experimental investigations are discussed concerning a borehole gas sampler used in arctic and antarctic glacier ice for the determination of absolute age of the various ice layers by radioisotope analysis. The borehole and the apparatus are described and illustrated.

41-2356
Antarctic ice sheet studies: results and plans. [Issledovaniia lednikovogo pokrova Antarktidy (itogi i plany)],
Aver'ianov, V.G., et al, *Antarktika; doklady komissii*, 1984, No.23, p.79-85, In Russian.
Korotkevich, E.S.
DLC G576.A65
Ice sheets, Glaciology, International cooperation.
Ice cover investigations, from the IGY until the present, are reviewed, and morphometric data on the ice sheet and ice-formation regions are presented. Moisture-balance and energy-exchange studies are included. New investigation methods, and some results, are also discussed, including the glaciological engineering field and the international cooperation among glaciologists. Plans for future studies are briefly outlined.

41-2357
Model calculation of glacial evolution. [Model'nye raschety evoliutsii oledeneniĭ],
Krass, M.S., *Antarktika; doklady komissii*, 1984, No.23, p.86-103, In Russian. 26 refs.
DLC G576.A65
Ice models, Paleoclimatology, Ice cover thickness, Glaciation.
A numerical model of glacial evolution is presented which permits to calculate climatic and geothermal effects on glaciation dynamics. New qualitative principles of ice cover expansion and degradation are obtained, and the reactions of ice sheets to climatic fluctuations are investigated. The interpretation of calculated results is applied to contemporary, as well as quaternary, glaciation.

41-2358
Mineralogy and morphology of disperse morainal debris on King George and Nelson islands. [Mineralogiia i morfologiia dispersnykh chastits morennogo materiala lednikov ostrovov King-Dzhordzh (Vaterloo) i Nel'son (Leiptsig), Subantarktika],
Konishchev, V.N., et al, *Antarktika; doklady komissii*, 1984, No.23, p.104-110, In Russian. 5 refs.
Moskalevskii, M.IU., Artemova, N.L.
DLC G576.A65
Geocryology, Glacial geology, Glacier beds, Glacial deposits.
Discussed are results of granulometric and mineralogical analyses of morainal debris, showing evidence of cryogenic transformation of matter from glacier bedrock.

41-2359
Freeze-thaw simulations on quartz-micaschist and their implications for weathering studies on Signy Island, Antarctica.
Hall, K., *British Antarctic Survey. Bulletin*, Nov. 1986, No.73, p.19-30, 27 refs.
Freeze thaw tests, Rocks, Frost weathering, Frost penetration, Frozen rock temperature, Signy Island.
Results of two series of freeze-thaw simulations on quartz-micaschist indicate that there is a significant difference in the rate of freeze penetrating depending upon whether the plane of schistosity is normal or parallel to the advancing freezing front. Rate of fall of temperature is up to five times faster when schistosity is parallel to the freeze advance. In these simulations the rate of fall of temperature within the rock was controlled primarily by the amplitude of the freeze event rather than the environmental rate of fall of temperature. A distinction is made between open systems (e.g. cliffs) and closed systems (e.g. loose blocks) with respect to processes and rate of breakdown. It is suggested that, with the very low porosity of this rock, there is a difference in the freeze mechanism based upon schistosity orientation but that overall moisture content plays a crucial role in determining whether any frost weathering will occur. (Auth.)

41-2360
Wind tunnel investigation on the riming of snowflakes, Parts 1 and 2.
Lew, J.K., et al, *Journal of the atmospheric sciences*, Nov. 1, 1986, 43(21), p.2392-2417, 36 + 11 refs.
Montague, D.C., Pruppacher, H.R., Rasmussen, R.M.
Ice crystal growth, Wind tunnels, Models, Snowflakes.

41-2361
Arctic flora of the USSR. Critical review of vascular plants in Arctic regions of the USSR. Volume 9. Families Droseraceae—Leguminosae. Part 2. Family Leguminosae. [Arkticheskaia flora SSSR. Kriticheskii obzor sosudistykh rastenii vstrechaiushchikhsia v arkticheskikh raionakh SSSR. Vypusk IX. Semeistva Droseraceae—Leguminosae. Chast' 2. Semeistvo Leguminosae],
Korobkov, A.A., et al, Leningrad, Nauka, 1986, 188p., In Russian and Latin with English table of contents enclosed.
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Models, Optical properties, Sea water freezing, Ice water interface, Lakes, Surface temperature, Sea ice distribution, Environment simulation, Ocean environments, Lake water, Ice formation, Heat transfer, Sea water, Heat balance.

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Volcanoes, Slope processes, Sedimentation, Glacial deposits, Ice rafting, Glacial erosion, Moraines, Glacial lakes, Subglacial observations.

41-2364
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Andreas, E.L., *Boundary-layer meteorology*, Jan. 1987, 38(1-2), MP 2195, p.159-184, Refs. p.182-184.
Snow surface, Ice surface, Roughness coefficient, Wind velocity, Snow air interface, Ice air interface.
Although the bulk aerodynamic transfer coefficients for sensible *(CH)* and latent *(CE)* heat over snow and sea ice surfaces are necessary for accurately modeling the surface energy budget, they have been measured rarely. This paper, therefore, presents a theoretical model that predicts neutral-stability values of *CH* and *CE* as functions of the wind speed and a surface roughness parameter. The crux of the model is establishing the interfacial sublayer profiles of the scalars, temperature and water vapor, over aerodynamically smooth and rough surfaces on the basis of a surface-renewal model in which turbulent eddies continually scour the surface, transferring scalar contaminants across the interface by molecular diffusion. Matching these interfacial sublayer profiles with the semi-logarithmic inertial sublayer profiles yields the roughness lengths for temperature and water vapor. When coupled with a model for the drag coefficient over snow and sea ice based on actual measurements, these roughness lengths lead to the transfer coefficients. *CE* is always a few percent larger than *CH*. Both decrease monotonically with increasing wind speed for speeds above 1 m/s, and both increase at all wind speeds as the surface gets rougher. Both, nevertheless, are almost always between .001 and .0015.

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41-2367
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Payette, S.
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Aircraft icing, Ice removal, Helicopters.

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Ice removal, Icing, Air flow.

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41-2372
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Ice removal, Power line icing.

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Kozlovskaia, L.S., ed.
Forestry, Soil microbiology, Soil microbiology, Revegetation, Soil erosion, Mosses, Vehicle wheels, Litter, Lichens, Podsol, Cryogenic soils, Frost penetration, Decomposition, Thermal regime.

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Taiga, Litter, Forestry, Revegetation, Mosses, Lichens.

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Vuorimaa, T.A.
Taiga, Frost penetration, Cryogenic soils, Forestry, Podsol, Thermal regime, Freeze thaw cycles.

41-2377
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Taiga, Forestry, Litter, Decomposition, Soil microbiology, Fungi, Humidity.

41-2379
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Forest soils, Taiga, Vehicle wheels, Soil erosion.

41-2380
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Roads, Ice formation, Icing, Ice growth, Pavements, Computerized simulation, Mathematical models, Crystal growth, Solutions.

41-2382
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Zil'berberg, V.V., Feoktistova, L.V.
Crystal growth, Mathematical models, Solutions, Water.

41-2383
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Road icing, Pavements, Ice formation, Ice growth, Computerized simulation.

41-2384
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Matishov, G.G., ed.
Plankton, Research projects, Ocean environments, Fast ice, Marine biology, Ice edge, Microbiology, Pack ice, Subglacial observations, Benthos, Bacteria, Polar regions, Algae.

41-2385
Recent trends in studying the ecology of Polar seas of the Arctic. [Sovremennye tendentsii izucheniia ekologii poliarnykh morei Arktiki],
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Fast ice, Ocean environments, Ice edge, Marine biology, Pack ice, Microbiology, Subglacial observations, Polar regions, Research projects.

41-2386
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Skarlato, O.A.
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41-2387
Ecologic problems of protecting living organisms in northern seas. [Ekologicheskie problemy okhrany zhivoĭ prirody severnykh morei],
Matishov, G.G., et al, Vsesoiuznaia konferentsiia "Ekologiia i biologicheskaia produktsiia Barentseva moria," Murmansk, July 1986. Tezisy dokladov (All-Union conference on ecology and biological productivity of the Barents Sea, Murmansk, July, 1986. Summaries) edited by G.G. Matishov, Murmansk, 1986, p.13-16, In Russian.
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41-2388
Bacterial plankton in the ecosystems of pelagic zones of the Barents and White seas. [Bakterioplankton v ekosistemakh pelagiali Barentseva i Belogo morei],
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Plankton, Bacteria, Microbiology, Biomass, Sea water.

41-2389
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Ocean environments, Plankton, Bacteria, Sampling, Samplers, Design.

41-2390
Basic methods and principal results of studying the role of physical, chemical and biologic factors in the cleaning of Arctic waters and ice from petroleum hydrocarbons. [Metodicheskie osnovy i glavnye rezul'taty izucheniia roli fiziko-khimicheskikh i biologicheskikh faktorov v ochishchenii arkticheskikh vod i l'dov ot neftianykh uglevodorodov],
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Izmailov, V.V., Koronelli, T.V.
Oil spills, Ice, Petroleum products, Water pollution, Arctic Ocean.

41-2391
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Mesiats, S.P.
Ocean environments, Water pollution, Petroleum products, Countermeasures.

41-2392
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Ocean environments, Water pollution, Petroleum products, Oil spills.

41-2393
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Kirillova, L.A.
Water pollution, Petroleum products, Countermeasures.

41-2394
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International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987, MP 2189, New York, American Society of Mechanical Engineers, 1987, 4 vols., Refs. passim. For selected papers see 41-2395 through 41-2449.
Lunardini, V.J., ed, Sinha, N.K., ed, Wang, Y.S., ed, Goff, R.D., ed.
Offshore structures, Offshore drilling, Ice loads, Ice navigation, Permafrost physics, Ice conditions, Ice physics, Engineering, Meetings, Ice solid interface.

41-2395
Applications of spray ice and rubble ice for Arctic offshore exploration.
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Ice (construction material), Ice islands, Offshore structures, Floating ice, Fast ice, Engineering, Sea ice, Design.

41-2396
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Masterson, D.M., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.9-16, 18 refs.
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Offshore drilling, Floating ice, Ice islands, Offshore structures, Exploration, Flooding, Equipment, Design.

41-2397
***In situ* measurement of visco-elastic properties of flooded ice and spray ice using flatjacks.**
Spencer, P.A., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.17-23, 21 refs.
Masterson, D.M.
Ice islands, Ice elasticity, Viscoelasticity, Floating ice, Grounded ice, Flooding, Offshore structures, Tests, Equipment.

41-2398
Design and construction of the Mars ice island.
Funegard, E.G., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.25-32, 10 refs.
Nagel, R.H., Olson, G.G.
Ice islands, Offshore structures, Ice loads, Equipment, Logistics, Ice creep, Design, Loads (forces).

41-2399
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Templeton, J.S., III, et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.33-40, 14 refs.
Clukey, E.C.
Offshore structures, Concrete structures, Foundations, Ice loads, Ocean bottom, Soil strength, Artificial islands, Offshore drilling, Shear strength, Frozen ground strength.

41-2400
Ice alert levels for Arctic operations.
Dunwoody, A.B., International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.41-46, 4 refs.
Offshore structures, Ice conditions, Ice reporting, Drift, Ships, Impact strength, Warning systems, Analysis (mathematics), Ice mechanics.

41-2401
Endicott slope protection design and construction.
Munday, J.P., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.47-54, 2 refs.
Bricker, W.F.
Slope protection, Artificial islands, Gravel, Models, Offshore structures, Design, Beaufort Sea.

41-2402
Design of gravity structures under iceberg loading.
Cheang, L.C., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.55-62, 3 refs.
Lam, I.P.
Offshore structures, Ice loads, Icebergs, Ocean bottom, Foundations, Impact strength, Ice solid interface, Design, Velocity, Models.

41-2403
Hazards assessment for a crude oil storage facility operating in an Arctic environment.
Phillippi, H.L., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.63-67.
Sherbine, C.A., Sharp, D.R.
Oil storage, Crude oil, Petroleum industry, Cold weather operation, Climatic factors, Computer applications, Heating, Thermal insulation, Oil spills, Countermeasures, Temperature variations.

41-2404
Performance of a closed tube thermosyphon with large length-diameter ratios.
Lock, G.S.H., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.69-77, 12 refs.
Simpson, G.A.
Pipes (tubes), Heat transfer, Thermal conductivity, Heating, Cooling, Thermosyphons.

41-2405
Heat transfer characteristics of a commercial thermosyphon with an inclined evaporator section.
Zarling, J.P., et al, MP 2190, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.79-84, 11 refs.
Haynes, F.D.
Heat transfer, Pipes (tubes), Subgrades, Air flow, Evaporation, Wind velocity, Wind tunnels, Tests, Thermosyphons.
Laboratory tests have been conducted on a full-size commercial thermosyphon in an atmospheric wind tunnel located at the U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. The test variables were evaporator angle, wind speed and heat transfer rate. The effects on thermosyphon performance of nearby walls oriented parallel, at 45 degrees and at right angles to the air flow direction were also studied. Air speed was varied between 0 and 6 meters per second in ten increments. Evaporator angles were varied from 0 to 6 degrees in 3-deg increments. Heat transfer rates were varied between 600 and 1500 watts in two increments. The air temperature for all tests was about -17 degrees Celsius. Test results are presented showing thermal conductance of the thermosyphon as a function of wind speed, evaporator inclination angle and heat transfer rate. Heat transfer conductances were determined to increase with increasing wind speed, increase with increasing inclination angle and generally decrease with increasing heat transfer rate.

41-2406
Combined forced and free convective flows of cold water over a vertical flat surface.
Jang, J.Y., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.85-89, 10 refs.
Chen, M.H.
Water temperature, Salinity, Convection, Ice melting, Freezing, Pressure, Water transport, Velocity, Analysis (mathematics), Temperature distribution.

41-2407
Computing the steady state freezing front location in two-dimensional algid soils.
Hromadka, T.V., II, et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.91-95, 10 refs.
Yen, C.C.
Soil freezing, Heat flux, Embankments, Geothermy, Boundary layer, Mathematical models, Computer programs.

41-2408
Exact solution for melting of frozen soil with thaw consolidation.
Lunardini, V.J., MP 2191, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.97-102, 9 refs.
Thaw consolidation, Ground thawing, Thawing rate, Strains, Stefan problem, Analysis (mathematics).
The Neumann solution is applicable to the thawing of a soil for which the thaw strain is zero and the density ratio of the frozen and thawed media is one. However, it is well known that the thaw strain for many soils is non-zero. An exact solution of the problem is presented for the case of non-zero thaw strain and variable density ratio. The thaw strain can have a significant effect upon the rate of thaw when compared to the Neumann solution. In some cases the Neumann solution can overpredict the thaw depth by more than 50%.

41-2409
Core temperature measurements on three Arctic icebergs.
Goodrich, L.E., International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.103-107, 2 refs.
Icebergs, Ice temperature, Ice cores, Temperature distribution, Boreholes.

41-2410
CVBEM modeling of tracking two-dimensional freezing fronts in algid soil.
Yen, C.C., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.109-112, 8 refs.
Hromadka, T.V., II.
Soil freezing, Ground thawing, Phase transformations, Heat transfer, Mathematical models, Heat flux.

41-2411
Temperature distribution and heat transfer during curing processes of large scale concrete structures.
Wu, C.Z., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.113-118, 5 refs.
Lee, Y., Gardner, N.J.
Concrete curing, Temperature distribution, Heat transfer, Concrete structures, Concrete strength, Cooling, Cracking (fracturing), Countermeasures, Permeability, Analysis (mathematics).

41-2412
Effect of hydrostatic stress on creep of a frozen sand.
Domaschuk, L., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.119-124, 5 refs.
Shields, D.H., Rahman, M.G.
Stresses, Frozen ground mechanics, Soil creep, Sands, Soil water, Volume, Stress strain diagrams, Rheology.

41-2413
Resistance of frozen ground to steady cone or pile penetration.
Huneault, P., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.125-132, 35 refs.
Ladanyi, B.
Frozen ground strength, Pile driving, Soil creep, Tests, Rheology, Analysis (mathematics).

41-2414
Contribution of snow to ice bridges.
Coutermarsh, B.A., et al, MP 2192, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.133-137, 6 refs.
Phetteplace, G.
Ice crossings, Ice cover strength, Snow (construction material), Freezing, Heat transfer, Bearing strength, Water, Ice cover thickness, Snow depth.
The role of snow in the construction of ice bridges is discussed. It is shown that it has limited value as a structural reinforcement and then only by adding water and freezing the resulting slurry. Equations are presented detailing the energy transfer during freezing of a water layer vs a water-snow slurry and the times involved with each. Natural ice thickening is inhibited by the insulating property of the snow, but snow can be used effectively as either a leveling or wearing surface. The snow should be of uniform depth and not mounded or windrowed to avoid deflecting the ice away from the water surface. This would substantially weaken the carrying capacity of the ice bridge.

41-2415
Towards the understanding of steady tilt phenomenon in semi-submersibles.
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Hydraulic structures, Stability, Water flow, Ocean waves, Analysis (mathematics), Models, Tests.

41-2416
Numerical study of the statistical visco-elastic response of ice under different loading conditions.
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Ice elasticity, Viscoelasticity, Loads (forces), Ice strength, Stresses, Ice loads, Forecasting, Analysis (mathematics).

41-2417
Modelling the mechanical properties of ice.
Szyszkowski, W., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.159-165, 26 refs.
Glockner, P.G.
Ice mechanics, Ice creep, Brittleness, Ice cracks, Cracking (fracturing), Analysis (mathematics), Models, Stresses, Compressive properties.

41-2418
Compressive strength of ice containing a bimodal distribution of grain sizes.
Laughlin, J.L., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.167-172, 16 refs.
Schulson, E.M.
Ice strength, Compressive properties, Brittleness, Fracturing, Grain size, Distribution, Stress strain diagrams.

41-2419
Experimental investigations on scale effect of Bohai sea ice.
Shen, W., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.173-179, 7 refs.
Ice strength, Sea ice, Ice cracks, Compressive properties, Tensile properties, Fracturing, China—Bohai Bay.

41-2420
Constitutive modeling of ice.
Vinogradov, A.M., International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.181-188, 57 refs.
Ice models, Ice elasticity, Ice plasticity, Ice creep, Analysis (mathematics).

41-2421
Effective poisson's ratio of isotropic ice.
Sinha, N.K., International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.189-195, 14 refs.
Ice elasticity, Viscoelasticity, Ice creep, Loads (forces), Strains, Grain size, Rheology, Ice structure, Stresses.

41-2422
Confined compressive strength of horizontal first-year sea ice samples.
Richter-Menge, J.A., MP 2193, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.197-207, 30 refs.
Ice strength, Compressive properties, Sea ice, Ice crystal structure, Strains, Tests, Temperature effects.
A total of 110 first-year sea ice samples from Prudhoe Bay, Alaska, were tested in unconfined and confined constant strain rate compression. All of the tests were performed in the laboratory on a closed-loop electrohydraulic testing machine at -10 C. The confined tests were performed in a conventional triaxial cell that maintained a constant ratio between the radial

and axial stress to simulate true loading conditions. Three strain rates (1/100, 1/1000, and 1/100,000/s) and three ratios between radial and axial stress (0.25, 0.50, and 0.75) were investigated. This paper summarizes the field sampling and testing techniques and presents data on the effect of confinement on the compressive strength, initial tangent modulus, and failure strain of the ice.

41-2423
Constitutive equation for sea ice based on microstructure and irreversible thermodynamics.
Brown, R.L., International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.209-213, 7 refs.
Ice mechanics, Microstructure, Sea ice, Thermodynamics, Ice crystal structure, Analysis (mathematics), Ice cracks, Ice density, Ice deformation, Strains, Stresses.

41-2424
Ship/ice interaction pressures and energies during ship ramming.
Kivisild, H.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.215-223, 39 refs.
Blanchet, D.
Ice pressure, Ships, Ice solid interface, Icebreakers, Ice loads, Mathematical models, Impact strength, Ice cover thickness.

41-2425
Tensile fracture model for ice.
Sunder, S.S., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.225-233, 50 refs.
Nanthikesan, S.
Ice cracks, Fracturing, Tensile properties, Ice loads, Ice models, Stress strain diagrams, Ice strength.

41-2426
Effect of sub-surface irregularities on the strength of multi-year ice.
Hallam, S.D., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.225-238, 6 refs.
Jones, N., Howard, M.W.
Ice strength, Ice bottom surface, Subsurface investigations, Tensile properties, Ice models, Ice cover thickness, Stresses.

41-2427
Mechanical properties of antarctic sea ice (II).
Urabe, N., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.239-244, 8 refs.
Inoue, M.
Ice mechanics, Compressive properties, Sea ice, Shear strength, Ice salinity, Air entrainment, Ice density, Ice structure, Ice cover thickness, Antarctica—Lützow-Holm Bay.
Succeeding to the 25th mission, the 26th mission collected sea ice samples from a land-fast 140 cm thick ice sheet at Lützow-Holm Bay in the Antarctic, and delivered them to Tokyo. Distributions of salinity, air content, density and fabric structure were examined along the thickness of the ice sheet. Mechanical properties such as uniaxial compressive strength, shear strength and mode II fracture toughness were measured for a wide range of loading rate at -10 C.

41-2428
Determination of mechanical properties of ice by quantum statistical approach and experiments.
Schwarz, J., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.245-252, 12 refs.
Ice mechanics, Ice crystal structure, Ice strength, Tensile properties, Salinity, Grain size, Experimentation, Strains, Statistical analysis.

41-2429
Use of the borehole dilatometer stress-relaxation test for determining the creep properties of ice.
Ladanyi, B., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.253-259, 21 refs.
Huneault, P.
Ice creep, Stresses, Relaxation (mechanics), Analysis (mathematics), Boreholes, Rheology, Tests, Measuring instruments, Frozen ground mechanics.

41-2430
Ten years of ice-induced vibration isolation in lighthouses.
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Remote sensing, Offshore structures, Ice push, Steel structures, Vibration, Countermeasures, Ice breaking, Foundations.

41-2431
Explicit technique for calculating first year ice loads on structures.
Walden, J.T., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.267-272, 8 refs.
Hallam, S.D., Baldwin, J.T.
Ice loads, Offshore structures, Ice creep, Stresses, Strains, Forecasting, Ice pressure, Temperature effects, Analysis (mathematics), Ice crystal structure.

41-2432
Level ice indentation on a pile array.
Mizikos, J.P., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.273-279, 14 refs.
Chen, V.L., Vivatrat, V.
Ice loads, Ice deformation, Pile structures, Offshore structures, Mathematical models, Tests, Forecasting.

41-2433
Dynamic analysis of failure modes on ice sheets encountering sloping structures.
Sodhi, D.S., MP 2194, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.281-284, 6 refs.
Ice loads, Dynamic loads, Offshore structures, Ice solid interface, Floating ice, Analysis (mathematics), Ice cover thickness, Velocity, Ice sheets, Surface properties, Ice deformation.
The interaction of a sloping structure with a slowly moving ice sheet usually results in bending failure of the ice. The resulting ice blocks are large in area in comparison to their thickness. However, when the velocity of the moving ice increases, the failure mode changes from bending to shear or crushing, resulting in very small pieces. This phenomenon has been observed both in the laboratory and in the field. As yet, no theoretical treatment has been presented to explain this transition. In this paper, a theoretical formulation of the problem is presented in which the ice sheet is treated as an ice beam moving against a sloping structure. The resulting differential equation was solved by the finite element method, and the solution is presented in non-dimensional form.

41-2434
Reference strength of ice to be used in designing offshore structures.
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Offshore structures, Ice strength, Ice crystal structure, Compressive properties, Analysis (mathematics), Design, Salinity, Temperature effects, Strains, Ice cover thickness.

41-2435
Methods for minimizing iceberg impact loads on gravity base structures; iceberg bumpers: conceptual design.
Wishahy, M.A., International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.291-298, 10 refs.
Offshore structures, Icebergs, Impact strength, Ice loads, Foundations, Ocean waves.

41-2436
Design consideration of global ice load distribution and local ice pressure on offshore structure.
Koma, N., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.299-305, 8 refs.
Ice loads, Ice pressure, Offshore structures, Distribution, Design, Tests, Ice solid interface, Models.

41-2437
Vessel transit through ridged ice.
Lee, J., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.307-312, 19 refs.
Wang, Y.S.
Ice navigation, Icebreakers, Ice breaking, Ice strength, Pressure ridges, Analysis (mathematics).

41-2438
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Lindberg, K., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.313-320, 10 refs.
Andersson, L.
Ice loads, Offshore structures, Hydraulic structures, Impact strength, Ice conditions, Ice mechanics, Deformation, Design, Sea ice distribution, Velocity, Damage, Ice detection.

41-2439
Transport over floating ice sheets.
Hinchey, M.J., International Offsnore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.321-328, 12 refs.
Ice roads, Floating ice, Flexural strength, Wave propagation, Velocity, Vehicles, Analysis (mathematics).

41-2440
Physical model study of an icebreaking tanker moored to an offshore SPM terminal in moving ice.
Machemehl, J.L., International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.329-339, 2 refs.
Icebreakers, Tanker ships, Ice mechanics, Offshore structures, Ice solid interface, Fast ice, Models, Moorings, Velocity.

41-2441
Observation of a model-scale semisubmersible in pack ice.
Szeto, K., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.341-350, 11 refs.
Rowe, J., Jones, S.J.
Hydraulic structures, Pack ice, Ice loads, Icebergs, Ice mechanics, Ice conditions, Models, Tests, Impact strength, Offshore structures.

41-2442
Creep analysis of a first-year sea ice sheet.
Phifer, E.H., International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.351-356, 4 refs.
Ice creep, Sea ice, Ice loads, Stresses, Rheology, Ice cover thickness, Bearing strength, Ice roads, Artificial islands, Pipelines, Ocean bottom.

41-2443
Some statistical issues in the analysis of global ice loads.
Salvalaggio, M.A., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.357-364, 9 refs.
Baldwin, J.T.
Ice loads, Offshore structures, Ice conditions, Ice floes, Statistical analysis.

41-2444
Flow of ice floe against a cylindrical structure.
Vinogradov, O.G., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.365-370, 9 refs.
Croasdale, K.R.
Offshore structures, Ice loads, Ice floes, Ice mechanics, Ice conditions, Loads (forces), Drift, Velocity, Hydrodynamics.

41-2445
Forecasting summer ice conditions in the Beaufort Sea.
Pritchard, R.S., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.371-377, 17 refs.
Coon, M.D., McPhee, M.G.
Ice forecasting, Ice conditions, Sea ice distribution, Weather forecasting, Ice mechanics, Drift, Ice edge, Wind factors, Beaufort Sea.

41-2446
On the splitting of icebergs—natural and induced.
Diemand, D., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.379-385, 11 refs.
Nixon, W.A., Lever, J.H.
Icebergs, Ice cracks, Explosion effects, Buoyancy, Stresses, Ice volume, Countermeasures, Damage, Analysis (mathematics).

41-2447
Probabilistic analysis of sea ice in North Bohai Bay.
Liu, T., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.387-391, 9 refs.
Tao, Z., Li, T., Wang, J.
Ice conditions, Sea ice, Ice loads, Offshore structures, Ice forecasting, Climatic factors, Ice cover thickness, Design, China—Bohai Bay.

41-2448
Prediction of short-term ice edge drift.
El-Tahan, M., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.393-400, 18 refs.
Warbanski, G.
Ice edge, Drift, Ice floes, Pack ice, Ocean currents, Forecasting, Wind factors, Models.

41-2449
Rational approach to the development of probabilistic design criteria for Arctic shipping.
Jordaan, I.J., et al, International Offshore Mechanics and Arctic Engineering Symposium, 6th, Houston, Texas, Mar. 1-6, 1987. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1987, p.401-406, 10 refs.
Nessim, M.A., Ghoneim, G.A., Murray, M.A.
Ice loads, Ice navigation, Ships, Ice solid interface, Ice detection, Design criteria, Impact strength, Ice floes, Analysis (mathematics).

41-2450
Final cleanup at selected (1975-1981) wellsites, sampling and testing of waters and bottom muds in the reserve pits, and the recording of tundra plant responses on the National Petroleum Reserve in Alaska (NPRA). Vol.1 Final wellsite cleanup on the National Petroleum Reserve, Alaska.
Smith, P.D.J., U.S. Geological Survey contract No.14-08-001-21787, Anchorage, Alaska, U.S. Geological survey, Office of the National Petroleum Reserve in Alaska, July 1986, 49p. + append., 2 refs.
Tundra, Pollution, Wells, Plants (botany), Countermeasures, Water chemistry, Petroleum industry, Sampling, Pits (excavations), Permafrost, United States—Alaska.

41-2451
Final cleanup at selected (1975-1981) wellsites, sampling and testing of water and bottom muds in the reserve pits and the recording of tundra plant responses on the National Petroleum Reserve in Alaska (NPRA). Vol.2 Sampling and testing of waters and bottom muds in the reserve pits.
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Tundra, Water chemistry, Pits (excavations), Mud, Sampling, Wells, Petroleum industry, Pollution.

41-2452
Final cleanup at selected (1975-1981) wellsites, sampling and testing of water and bottom muds in the reserve pits and the recording of tundra plant responses on the National Petroleum Reserve in Alaska (NPRA). Vol.3 Recording of tundra plant responses.
McKendrick, J.D., U.S. Geological Survey contract No.14-08-001-21787, Anchorage, Alaska, U.S. Geological Survey, Office of the National Petroleum Reserve in Alaska, July 1986, 225p., Refs. p.214-219.
Tundra, Vegetation, Pollution, Petroleum industry, Damage, Countermeasures, Chemical analysis, Pits (excavations), Wells.

41-2453
Improving the design of railroad routes. [Sovershenstvovanie proektirovaniia trassy zheleznykh dorog],
Turbinin, I.V., ed. *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Sbornik nauchnykh trudov*, 1984, Vol.750, 106p., In Russian.
Railroads, Permafrost beneath structures, Urban planning, Houses, Topography, Climatic factors, Geocryology.

41-2454
Planning the distribution of settlements when designing railroads for little-explored regions. [K voprosu razmeshcheniia poselkov pri proektirovanii zheleznykh dorog v maloosvoennykh raionakh],
Bykov, IU.A., et al, *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Sbornik nauchnykh trudov*, 1984, Vol.750, p.34-41, In Russian. 2 refs.
Pereselenkova, I.G.
Railroads, Permafrost beneath structures, Urban planning, Houses, Design, Cost analysis.

41-2455
Designing routes for complicated geological and climatic conditions in plains. [Voprosy proektirovaniia trassy v slozhnykh geologicheskikh i klimaticheskikh usloviiakh ravninnogo rel'efa],
Skutin, A.I., *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Sbornik nauchnykh trudov*, 1984, Vol.750, p.66-74, In Russian.
Roads, Mathematical models, Railroads, Subgrades, Embankments, Permafrost beneath structures, Design.

41-2456
All-Union Conference on the present state and prospects of scientific research in Siberian preservation parks, Novosibirsk, Aug. 26-28, 1986. Summaries. [Tezisy dokladov],
Vsesoiuznoe soveshchanie "Sovremennoe sostoianie i perspektivy nauchnykh issledovanii v zapovednikakh Sibiri", Novosibirsk, Aug. 26-28, 1986, Moscow, 1986, 165p., In Russian. For selected papers see 41-2457 through 41-2461.
Sokolov, V.E., ed, Koropachinskiĭ, I.IU., ed, Taran, I.V., ed.
Tundra, Environmental protection, Forest land, Alpine landscapes, Grasses, Mosses, Cryogenic soils, Plant ecology, Ecosystems, Landscape types, Experimentation, Research projects.

41-2457
Preliminary results of studying mosses in the "Stolby" and Sayan-Shushenskoye preservation parks. [Predvaritel'nye itogi issledovaniia mkhov zapovednikov "Stolby" i Saiano-Shushenskogo],
Vasil'ev, A.N., Vsesoiuznoe soveshchanie "Sovremennoe sostoianie i perspektivy nauchnykh issledovanii v zapovednikakh Sibiri", Novosibirsk, Aug. 26-28, 1986. Tezisy dokladov (All-Union Conference on the present state and prospects of scientific research in Siberian preservation parks, Novosibirsk, Aug. 26-28, 1986. Summaries) edited by V.E. Sokolov, I.IU. Koropachinskiĭ and I.V. Taran, Moscow, 1986, p.70-72, In Russian.
Alpine landscapes, Mosses, Plant ecology, Ecosystems.

41-2458
Botanical studies in Siberian preservation parks. [O zadachakh botanicheskikh issledovanii v zapovednikakh Sibiri],
Koropachinskiĭ, I.IU., et al, Vsesoiuznoe soveshchanie "Sovremennoe sostoianie i perspektivy nauchnykh issledovanii v zapovednikakh Sibiri", Novosibirsk, Aug. 26-28, 1986. Tezisy dokladov (All-Union Conference on the present state and prospects of scientific research in Siberian preservation parks, Novosibirsk, Aug. 26-28, 1986. Summaries) edited by V.E. Sokolov, I.IU. Koropachinskiĭ and I.V. Taran, Moscow, 1986, p.85-88, In Russian.
Malyshev, L.I., Sobolevskaia, K.A.
Environmental protection, Plant ecology, Experimentation, Research projects.

41-2459
Artificial coenosis as a plant protection method. [Iskusstvennyĭ tsenoz kak metod okhrany rastenii],
Lubiagina, N.P., Vsesoiuznoe soveshchanie "Sovremennoe sostoianie i perspektivy nauchnykh issledovanii v zapovednikakh Sibiri", Novosibirsk, Aug. 26-28, 1986. Tezisy dokladov (All-Union Conference on the present state and prospects of scientific research in Siberian preservation parks, Novosibirsk, Aug. 26-28, 1986. Summaries) edited by V.E. Sokolov, I.IU. Koropachinskiĭ and I.V. Taran, Moscow, 1986, p.88-90, In Russian.
Forest soils, Plant ecology, Ecosystem, Environmental protection.

41-2460
Mixed-grass-edge tundra soils of Wrangel Island. [Pochvy raznotravno-osokovykh tundr ostrova Vrangelia],
Orlovskiĭ, S.-D.D., Vsesoiuznoe soveshchanie "Sovremennoe sostoianie i perspektivy nauchnykh issledovanii v zapovednikakh Sibiri", Novosibirsk, Aug. 26-28, 1986. Tezisy dokladov (All-Union Conference on the present state and prospects of scientific research in Siberian preservation parks, Novosibirsk, Aug. 26-28, 1986 Summaries) edited by V.E. Sokolov, I.IU. Koropachinskiĭ and I.V. Taran, Moscow, 1986, p.98, In Russian.
Cryogenic soils, Tundra, Active layer, Plant ecology, Grasses, Soil formation, Soil profiles, Soil chemistry.

41-2461
Preservation of high-altitude vegetation in the Altai-Sayan Mountains. [K probleme okhrany vysokogornoĭ rastitel'nosti Altae-Saianskoĭ gornoĭ oblasti],
Sedel'nikov, V.P., Vsesoiuznoe soveshchanie "Sovremennoe sostoianie i perspektivy nauchnykh issledovanii v zapovednikakh Sibiri", Novosibirsk, Aug. 26-28, 1986. Tezisy dokladov (All-Union Conference on the present state and prospects of scientific research in Siberian preservation parks, Novosibirsk, Aug. 26-28, 1986. Summaries) edited by V.E. Sokolov, I.IU. Koropachinskiĭ and I.V. Taran, Moscow, 1986, p.106-108, In Russian.
Alpine landscapes, Environmental protection, Human factors, Grazing, Soil erosion.

41-2462
Force budget of ice sheets.
Whillans, I.M., Dynamics of the west antarctic ice sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.17-36, Refs. p.34-36.
Rheology, Ice sheets, Glacier flow, Stresses, Antarctica—West Antarctica.
Data relating to the stresses driving and resisting the flow of the west antarctic ice sheet are discussed. The driving stress is readily calculated and it shows an almost exponential decrease from the inland ice, along Ice Stream B, and across the Ross Ice Shelf to the calving edge. Prior work shows that basal drag restrains inland ice and that the backstress on ice shelves originates at islands, shoals, and the sides. The restraints on ice streams are not at present known, but basal drag, side drag, and back-pressure from the interstream ridges where the inland ice funnels into ice streams, are potential controls. (Auth. mod.)

41-2463
Morphological and chemical data on microparticles in antarctic snows.
Goldschmidt, A., *Canadian mineralogist*, Mar. 1986, 24(1), p.99-103, With French summary. 5 refs.
Aerosols, Snow impurities, Snow composition, Antarctica—Antarctic Peninsula.
The morphology and chemical composition of microparticles left after the slow evaporation of samples of antarctic snow were studied. These samples were collected in a stratigraphic well located on the Antarctic Peninsula. Electron-microprobe analyses show the presence of Si, Ti, Al, Fe, Mg, Ca, Na, K, P, C, Pb, N, O, S and Cl. Zeolites, clay minerals, olivine, amphibole, calcium sulfate, organic substances and marine salts were identified by scanning-electron microscopy. The presence of these particles is due to an eolian mode of transportation. (Auth.)

41-2464
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Lyford, F.P., Cohen, A.J.
Ground water, Glacial deposits, Bibliographies, Water reserves, Water table, Mathematical models, Hydraulics.

41-2465
Comparative snow accumulation and melt during rainfall in forested and clear-cut plots in the western Cascades of Oregon.
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Snow accumulation, Snowmelt, Forest land, Rain, Watersheds, Slopes, Heat sources, Mountains, United States—Oregon—Cascade Range.

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Forest land, Snow cover distribution, Snow accumulation, Snow water equivalent, Snowmelt, Snow hydrology, Runoff, Watersheds, Snow evaporation, Canada—Alberta—James River.

41-2467
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41-2468
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Shimura, K.
Doped ice, Hydrogen bonds, Ice electrical properties, Ice crystal structure, Temperature effects, Phase transformations, Dielectric properties.

41-2469
Use of "Five-Minute Epoxy" as a cryogenic leak sealant.
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Resins, Sealing, Leakage, Freeze thaw cycles.

41-2470
***In situ* creep properties in ice-rich permafrost soil.**
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Morgenstern, N.R.
Permafrost physics, Ground ice, Soil creep, Frost heave, Settlement (structural), Frozen ground mechanics, Rheology, Measurement, Shear strain.

41-2471
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Morgenstern, N.R.
Frozen ground mechanics, Soil creep, Permafrost physics, Clays, Stress strain diagrams, Gas pipelines, Slopes, Ground ice, Rheology, Tests.

41-2472
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41-2473
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41-2474
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Steenhuis, T.S.
Heat transfer, Moisture transfer, Frozen ground physics, Soil freezing, Soil water migration, Thermodynamics, Porous materials, Freezing points, Ground ice, Temperature distribution.

41-2475
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Soil temperature, Temperature distribution, Experimentation, Models, Analysis (mathematics), Temperature variations.

41-2476
Ice jam characteristics, Liard-Mackenzie rivers confluence.
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Ice jams, Floating ice, Ice breakup, Floods, River ice, Water level.

41-2477
Tracing faecal pollution by coprostanol and intestinal bacteria in an ice-covered Finnish lake loaded with both industrial and domestic sewage.
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Sewage disposal, Ice cover effect, Water pollution.

41-2478
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Snow impurities, Air pollution.

41-2479
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Ramsay, J.D.F.
Neutron scattering, Supercooling, Hydrogen bonds, Freezing.

41-2480
Growth and flowering in *Eriophorum vaginatum*, annual and latitudinal variation.
Shaver, G.R., et al, *Ecology*, Dec. 1986, 67(6), p.1524-1535, 40 refs.
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Plant ecology, Climate, Tundra, United States—Alaska.

41-2481
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41-2482
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Standards.

41-2483
Guide for extreme cold weather operations.
Barclay, D.D., comp, Norfolk, Naval Safety Center, July 1986, c450p., Refs. passim.
Weather forecasting, Snow, Ice.
The guide consists of a collection of booklets, flyers, maps, charts, pamphlets, articles and manuals intended to help better prepare to deploy to the Polar regions. The information provided is grouped and addressed by primary areas of concern, such as working and surviving in extremely cold environment; aircraft and systems; operating surfaces; and unique operational considerations. An instructional program for U.S. Navy Medical Department personnel on cold weather medicine, as well as instructions for cold weather injury, prevention, detection and first aid, are included.

41-2484
Service life of concrete structures. [Betonirakenteiden käyttöikä],
Vesikari, E., *Finland. Technical Research Centre. Research reports*, 1986, No.417, 88p., In Finnish with English summary. 49 refs.
Concrete structures, Frost resistance, Concrete durability, Mathematical models, Corrosion, Frost action, Reinforced concretes, Tests, Design.

41-2485
Temperature distribution in composite bridges.
Kennedy, J.B., et al, *Journal of structural engineering*, Mar. 1987, 113(3), p.475-482, 16 refs.
Soliman, M.H.
Bridges, Thermal stresses, Temperature distribution, Concrete pavements, Seasonal variations, Salting, Temperature effects.

41-2486
Introduction.
Suonio, V., International Winter Road Congress, Tampere, Finland, Feb. 25-27, 1986. [Proceedings], [1986], p.32-34, In French and English.
Winter maintenance, Road maintenance, Snow removal, Ice removal, Meetings, Equipment, Microclimatology, Finland.

41-2487
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Winter maintenance, Road maintenance, Snow removal, Ice removal, Chemical ice prevention, Pollution, Salting, Equipment, Warning systems, Environmental impact.

41-2488
Themes of the congress.
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Winter maintenance, Road maintenance, Road icing, Snow removal, Ice removal, Safety, Warning systems, Accidents.

41-2489
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Hintikka, J., International Winter Road Congress, Tampere, Finland, Feb. 25-27, 1986. [Proceedings], [1986], p.78-81, In French and English.
Snow removal, Ice removal, Equipment, Winter maintenance, Road maintenance.

41-2490
Sea ice off the Icelandic coasts, Oct. 1985-Sep. 1986. [Hafís vid strendur Íslands, október 1985-september 1986], Reykjavik, Iceland, 1986, 32p., In Icelandic with English summary.
Sea ice distribution, Ice conditions, Ice edge, Ice surveys, Meteorological data, Seasonal variations, Iceland.

41-2491
Effect of polysaccharide stabilizers on the rate of growth of ice.
Muhr, A.H., et al, *Journal of food technology*, Dec. 1986, 21(6), p.683-710, 44 refs.
Blanshard, J.M.V.
Ice formation, Solutions, Freezing points, Diffusion, Molecular structure.

41-2492
Avalanche and meteorological summaries for Austria, winter 1984/85 and 1985/86. [Lawinenereignisse und Witterungsablauf in Österreich, Winter 1984/85 und 1985/86],
Hauk, E., et al, *Forstliche Bundesversuchsanstalt, Wien. Schriftenreihe*, 1986, No.16, 90p., In German with English and French summaries. 2 refs.
Höller, P., Schaffhauser, H.
Avalanche formation, Snow cover stability, Snowfall, Accidents, Damage, Statistical analysis, Climatic factors, Temperature effects.

41-2493
Nitrogen-fixing pseudomonads isolated from roots of plants grown in the Canadian High Arctic.
Lifshitz, R., et al, *Applied and environmental microbiology*, Feb. 1986, 51(2), p.251-255, 21 refs.
Plants (botany), Bacteria, Microbiology, Roots, Canada—Northwest Territories—Ellesmere Island.

41-2494
Antarctic journal of the United States, Vol.21, No.3.
U.S. National Science Foundation, Washington, D.C., Sep. 1986, 24p.
Research projects, Antarctica.
This issue of AJUS is devoted to various aspects of the 1986-1987 research program. An early start was made on the ozone research project with 12 scientists arriving at McMurdo in August. General views are given of research objectives in atmo-

spheric physics, glaciology, biology, ocean sciences, and earth sciences. These are followed by précis of specific projects in these disciplines, along with investigators' names and affiliations. A look is also taken at the logistics of the programs and support at the stations, in the air and at sea. A new data acquisition and display system for NSF's LC-130R is described. NSF funding awards for antarctic research for 1/30/86 through 6/30/86 are listed. Weather data measurements at McMurdo, Palmer, Siple, and South Pole Stations are given for May, June, and July 1986.

41-2495
Bank conditions and erosion along selected reservoirs.
Gatto, L.W., et al, *Environmental geology and water sciences*, 1987, 9(3), MP 2196, p.143-154, 36 refs.
Doe, W.W., III.
Shore erosion, Banks (waterways), Frost heave, Frost weathering, Ice scoring, Ice rafting, Ice push.

41-2496
Nose-torquer electro-impulse deicing systems.
Sandorff, P.E., *U.S. Patent Office. Patent*, July 10, 1984, 10 col. + 4 sheets. USP-4,458,865.
Ice removal, Aircraft icing.

41-2497
High-voltage network for areas of increased intensity of icing.
Genrikh, G.A., et al, *U.S. Patent Office. Patent*, Nov. 21, 1978, 38 col. + 22 sheets. USP-4,126,792.
Power line icing, Ice melting, Electric heating.

41-2498
Pneumatic deicer and deicing method.
Ely, D.N., et al, *U.S. Patent Office. Patent*, May 14, 1985, 6 col. + figs. USP-4,516,745.
Macarchenia, T.
Ice removal, Aircraft icing.

41-2499
Device for detecting and preventing the formation of ice on contoured surfaces.
Cattaneo, C.J., et al, *U.S. Patent Office. Patent*, Apr. 2, 1985, 6 col. + sheets. USP-4,508,295.
Derouet, P.R.J., Larouche, M.C.F.
Ice removal, Aircraft icing, Ice detection.

41-2500
Numerical simulation of the effects of varying ice crystal nucleation rates and aggregation processes on orographic snowfall.
Cotton, W.R., et al, *Journal of climatology and applied meteorology*, Nov. 1986, 25(11), p.1658-1680, 44 refs.
Tripoli, G.J., Rauber, R.M., Mulvihill, E.A.
Ice crystals, Nucleation rate, Environment simulation, Mathematical models, Topographic effects, Snowfall.

41-2501
Point probability distributions of frozen soil.
Zuzel, J.F., et al, *Journal of climate and applied meteorology*, Nov. 1986, 25(11), p.1681-1686, 22 refs.
Pikul, J.L., Jr., Greenwalt, R.N.
Frozen ground, Frost forecasting, Environment simulation, Models.

41-2502
Short-term variation of oxygen isotopic composition of falling snow.
Fujiyoshi, Y., et al, *Tellus*, Nov. 1986, 38B(5), p.353-363, 22 refs.
Wakahama, G., Kato, K.
Snowfall, Snow composition, Oxygen isotopes.

41-2503
Methanesulphonate in antarctic ice.
Ivey, J.P., et al, *Tellus*, Nov. 1986, 38B(5), p.375-379, 14 refs.
Davies, D.M., Morgan, V., Ayers, G.P.
Ice sheets, Impurities, Antarctica—Budd Coast.
Methanesulphonate was investigated as a potential contributor to the sulphur budget and to the acidity of antarctic ice from Law Dome (66.5 S, 113.0 E). The anion was found to be present at a mean concentration of 0.08 micro eq/l and ranged between 0.006 and 0.28 micro eq/l. Although methanesulphonate was only a minor anion in comparison with chloride and sea salt sulphate, it was comparable with nitrate and excess sulphate. The concentration of methanesulphonate in the ice did not correlate significantly with excess sulphate nor was there a simple seasonal dependence such as is found for non-sea salt sulphate. (Auth.)

41-2504
Photoadaptations of photosynthesis and carbon metabolism by phytoplankton from McMurdo Sound, Antarctica. 1. Species-specific and community responses to reduced irradiances.
Rivkin, R.B., et al, *Limnology and oceanography*, 1987, 32(1), p.249-259, Refs. p.258-259.
Voytek, M.A.
Algae, Photosynthesis, Light transmission, Ice cover effect, Antarctica—McMurdo Sound.
Irradiance-dependent rates of photosynthesis and photosynthate labeling patterns were measured for phytoplankton in McMurdo Sound. Species-specific and traditional whole-water techniques were used to compare the physiological responses of algae collected in a high light environment at the ice edge and from a low light environment under the annual sea ice. There were differences among species within the same sample, for the same species isolated from high and low light environments, and when species-specific responses were compared with that of the natural assemblage. Low-light-adapted algae incorporated significantly less C-14 into proteins and more into low molecular weight compounds and lipids than the same species isolated from a high light environment. Under conditions where reduced rates of protein synthesis were coupled with high rates of carbon uptake, the measurement of photosynthesis may not accurately reflect the physiological condition of the phytoplankton. (Auth. mod.)

41-2505
Aerosol concentrations over the last climatic cycle (160 kyr) from an antarctic ice core.
De Angelis, M., et al, *Nature*, Jan. 22-28, 1987, 325(6102), p.318-321, 25 refs.
Barkov, N.I., Petrov, V.N.
Aerosols, Impurities, Ice composition, Paleoclimatology, Ice cores, Drill core analysis, Antarctica—East Antarctica, Antarctica—Vostok Station.
Time series, covering more than 150,000 years for dust and marine salt loadings in the antarctic atmosphere, have been constructed from measurements of concentrations of aluminum and sodium in an ice core taken from East Antarctica. They exhibit an inverse correlation with delta O-18 measurements. This work represents the first detailed study of marine and continental inputs over Antarctica since the end of the penultimate glacial age. The results extend understanding of aerial transport processes during the last glacial cycle. (Auth. mod.)

41-2506
Perennial N2 supersaturation in an antarctic lake.
Wharton, R.A., et al, *Nature*, Jan. 22-28, 1987, 325(6102), p.343-345, 14 refs.
McKay, C.P., Mancinelli, R.L., Simmons, G.M., Jr.
Ice cover effect, Antarctica—Hoare, Lake, Antarctica—Victoria Land.
The results of a study which, for the first time, documents the supersaturation of N2 in a lake are reported. Dissolved N2 levels of 145% and 163% were determined from samples taken just below the ice cover and at a depth of 12 m, respectively. The relative importance of biological and abiological sources is reflected in the ratio of N2 concentration to O2 concentration. In Lake Hoare this ratio is 1.20 at the ice/water interface and 1.05 at 12 m; considerably different from the ratio in equilibrium with air (=1.8). Based on these results it is determined that about half of the net O2 production in the lake is the result of biological processes. (Auth. mod.)

41-2507
Proceedings.
Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985, *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, 168p., Refs. passim. For individual papers see 41-2508 through 41-2521.
Johnston, G.H., ed, Parameswaran, V.R., ed.
Permafrost, Pipelines, Subsea permafrost, Frost heave, Settlement (structural), Engineering, Meetings, Underground pipelines, Ground thawing.

41-2508
Permafrost distribution and the Quaternary history of the Mackenzie-Beaufort region: a geothermal perspective.
Judge, A.S., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.3-10, 16 refs.
Permafrost distribution, Geothermy, Permafrost physics, Ground ice, Permafrost thermal properties, Quaternary deposits, Subsea permafrost, Electrical properties, Acoustics, Wells.

41-2509
Drilling and sampling offshore permafrost.
Ruffell, J.P., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.11-15.
Subsea permafrost, Offshore drilling, Permafrost physics, Boreholes, Engineering, Beaufort Sea.

41-2510
Review of subsea permafrost conditions along Alaska's coasts.
Osterkamp, T.E., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.16-23.
Subsea permafrost, Permafrost physics, Permafrost distribution, Permafrost origin, Ground thawing, Stefan problem, Permafrost thermal properties.

41-2511
Derivation of engineering properties of permafrost from the cone penetration test.
Ladanyi, B., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.24-33, 13 refs.
Permafrost physics, Pile driving, Ground ice, Boreholes, Engineering, Analysis (mathematics), Tests.

41-2512
Impact of offshore permafrost on oil and gas production.
Graham, C.A., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.35-47.
Subsea permafrost, Natural resources, Permafrost thermal properties, Permafrost distribution, Petroleum industry, Gas production, Exploration, Salinity, Deformation.

41-2513
Subsea permafrost: summary of discussion and research needs. *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.48-49.
Subsea permafrost, Permafrost distribution, Seismic surveys, Acoustics, Boreholes, Research projects, Engineering, Beaufort Sea.

41-2514
Norman Wells Expansion Project—overview.
Tibbatts, R.M., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.51-59.
Permafrost distribution, Artificial islands, Offshore drilling, Underground pipelines, Hot oil lines, Engineering, Crude oil, Petroleum industry, Canada—Northwest Territories—Norman Wells.

41-2515
Norman Wells Pipeline Project.
Pick, A.R., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.61-66.
Underground pipelines, Petroleum industry, Permafrost, Hot oil lines, Environmental impact, Soil erosion, Drainage, Settlement (structural), Countermeasures.

41-2516
Design of Norman Wells pipeline for frost heave and thaw settlement.
Nixon, J.F., et al, *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.67-85, 10 refs.
Pick, A.R.
Underground pipelines, Frost heave, Settlement (structural), Ground thawing, Permafrost, Loads (forces), Design criteria, Engineering, Temperature effects, Pressure, Canada—Northwest Territories—Norman Wells.

41-2517
Quill Creek test facility.
Fielder, D.E., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.86-115.
Permafrost, Gas pipelines, Frost heave, Underground pipelines, Settlement (structural), Forecasting, Engineering, Tests, Environmental protection.

41-2518
Polar gas project: structural design aspects.
Workman, G.H., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.116-125, 2 refs.
Gas production, Underground pipelines, Discontinuous permafrost, Frozen ground mechanics, Engineering, Temperature effects, Rheology, Settlement (structural).

41-2519
Alyeska Pipeline: monitoring, operations and maintenance.
Johnson, E.R., *National Research Council, Canada Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.126-132.
Pipelines, Permafrost, Cold weather operation, Engineering, Maintenance, Monitors, Static stability, Settlement (structural), Underground pipelines.

41-2520
Monitoring of thawing permafrost slopes: interprovincial pipe line.
McRoberts, E.C., et al, *National Research Council, Canada Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.133-151, 15 refs.
Hanna, A.J., Smith, J.
Monitors, Permafrost thermal properties, Ground thawing, Slope protection, Underground pipelines, Thaw depth, Soil temperature.

41-2521
Canada-France buried chilled pipeline experiment.
Williams, P.J., *National Research Council, Canada. Technical memorandum*, Nov. 1986, No.139, Workshop on Subsea Permafrost, and Pipelines in Permafrost, Edmonton, Alberta, Nov. 18-19, 1985. Proceedings, p.152-159.
Underground pipelines, Soil freezing, Frost heave, Soil creep, Ground ice, Temperature effects, Experimentation, Rheology, Settlement (structural).

41-2522
Natural and forced convection in mineral fibre wall insulation. [Mineraalivillaeristyksen ilmavirtaukset ja tuulensuojaus],
Kohonen, R., et al, *Finland Technical Research Centre. Research reports*, 1986, No.431, 119p., In Finnish with English summary. 12 refs.
Kokko, E., Mähönen, T., Ojanen, T.
Thermal insulation, Heat transfer, Air flow, Houses, Convection, Computer applications, Experimentation.

41-2523
Frost resistance and accelerated hardening of concrete with blended slag binder. [Kuonasideaineisen betonin pakkasenkestävyys ja kovettumisen nopeuttaminen],
Ruohomäki, J., *Finland. Technical Research Centre. Research reports*, 1986, No.415, 35p. + append., In Finnish with English summary. 2 refs.
Frost resistance, Concrete aggregates, Concrete hardening, Flexural strength, Salting, Concrete strength, Heating.

41-2524
Melting of frozen, porous media contained in a horizontal or a vertical cylindrical capsule.
Weaver, J.A., et al, *International journal of heat and mass transfer*, Dec. 1986, 29(12), p.1943-1951, With French, German and Russian summaries. 15 refs.
Viskanta, R.
Ice melting, Porous materials, Liquid solid interfaces, Freezing, Temperature distribution, Convection, Thermal conductivity, Phase transformations, Tests.

41-2525
Polymer concrete mix takes to cold weather.
Crichton, W., *Engineering news-record*, Mar. 12, 1987, 218(11), p.32.
Cold weather construction, Concrete curing, Polymers, Winter concreting.

41-2526
Esso's ice island shows how Arctic life goes on.
Cottrill, A., *Offshore engineer*, Jan. 1987, p.42-48.
Ice islands, Offshore structures, Ice cover thickness, Offshore drilling, Ice conditions, Caissons, Tanker ships, Beaufort Sea.

41-2527
Estimating ocean-air heat fluxes during cold air outbreaks by satellite.
Chou, S.-H., et al, *U.S. National Aeronautics and Space Administration. Technical memorandum*, Nov. 1981, No.83854, 48p., N82-19781, 30 refs.
Atlas, D.
Remote sensing, Heat flux, Oceans, Air temperature, Water temperature, Sea water, Cloud cover.

41-2528
Comparison of theoretical and actual satellite microwave brightness temperatures to determine snowpack properties.
Burke, H.K., et al, *U.S Environmental Research and Technology, Inc. Report*, July 1981, ERT-A653-F, 85p., PB82-161118, 24 refs.
Bowley, C.J., Barnes, J.C.
Snow cover, Remote sensing, Snow depth, Microwaves, Snowmelt, Mathematical models, Data processing, Scattering, Meteorological charts.

41-2529
Weather extremes.
Schmidli, R.J., *U.S. National Oceanic and Atmospheric Administration. Technical memorandum*, Feb. 1981, NWS WR-28, 15p. PB81-205312.
Climatology, Records (extremes), Meteorological data, Snowfall, Air temperature, Precipitation (meteorology), Wind velocity, Statistical analysis, Atmospheric pressure.

41-2530
Instructions for completing a field worksheet for inventorying building materials.
Merry, C.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, SR 86-33, 25p., ADA-176 467, 9 refs.
Construction materials, Precipitation (meteorology), Environmental protection, Damage, Chemical analysis.
A worksheet for use in the field was developed to inventory building materials in four northeastern cities in support of the EPA Acid Rain program. The initial form was tested for two of the cities, the redesigned and simplified form discussed in this report was used in the two remaining cities. The worksheet was designed to provide information on the census tract, land use type and sampling frame, the dimensions and type of building, the lot size; the materials distribution percentages in the foundation, first story and all above stories, and the surface area and material types for the roof, roof-mounted apparatus (vents, flues, stacks, skylights and flashing), chimneys, rain gutters, downspouts and fences. The worksheet is recommended for future surveys of building materials in other cities.

41-2531
Calibrating HEC-2 in a shallow, ice-covered river.
Calkins, D.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, SR 86-34, 25 refs., ADA-176 485, 7 refs.
Adley, M.D.
Flood control, Icebound rivers, Ice cover thickness, River flow, Water level, Mathematical models, Floating ice, Freezeup, Ice cover effect.
HEC-2 has recently been modified to accept input for a floating ice cover. Several techniques were evaluated in calibrating the model versus the measured field data for a steep, shallow river. The ice cover thickness, as expected, was the dominant parameter affecting the water levels and not the Manning's roughness coefficient of the ice cover. Excellent field data on ice cover thicknesses, water levels and flow discharges were available for calibration. The relatively shallow depths of less than 6 ft and ice covers of up to 3-ft thick created special problems in matching the water levels. The actual ice cover thicknesses measured in the field should be used as a guide for ice thickness input to the model for shallow streams. The transition of ice cover thickness from one section to the next in the model is extremely critical, otherwise there will be excessive head losses. Several methods for interpolating the ice thickness between the measured sections were attempted in trying to simulate the freeze-up, and ineffective flow areas were blocked off as well. The latter provided the most realistic simulation of flow velocities beneath the ice cover.

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This report presents the first series of conventional triaxial tests carried out on columnar first-year sea ice samples obtained from the field and tested under controlled laboratory conditions using a large-capacity test machine. A total of 110 horizontal ice samples from Prudhoe Bay, Alaska, were tested on a closed-loop electro-hydraulic test machine at -10 C in unconfined and confined constant-strain-rate compression. The confined tests were conducted in a conventional triaxial cell that maintained a constant ratio between the radial and axial stress to simulate *in situ* loading conditions. The load ratios used were 0.25, 0.50 and 0.75. The strain rate of each test was constant at 1·100, 1·1000, or 1·100,000 per sec. Data are presented on the strength, failure strain and initial tangent modulus of the first-year sea ice under these loading conditions. The effects of confining pressure, strain rate and ice structure on the mechanical properties of the ice are examined.

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Pavements, Freeze thaw cycles, Airports, Thaw weakening, Bituminous concretes, Subgrade soils, Deformation, Roads, Surface properties, Design.
Stress-deformation data for unbound base, subbase, and silty sand subgrade soils in two airfield pavements were obtained from *in situ* tests and laboratory tests. Surface deflections were measured in the *in situ* tests, with a falling-weight deflectometer, when the soils were frozen, thawed, and at various stages of recovery from thaw weakening. The measured deflections were used to judge the validity of procedures developed for laboratory triaxial tests to determine nonlinear resilient moduli of specimens in the frozen, thawed and recovering states. The validity of the nonlinear resilient moduli, expressed as functions of externally applied stress and moisture tension, was confirmed by using the expressions to calculate surface deflections that were found to compare well with deflections measured in the *in situ* tests. The tests on specimens at various stages of recovery are especially significant because they show a strong dependence of the resilient modulus on moisture tension, leading to the conclusion that predictions or *in situ* measurements of moisture tension can be used to evaluate expected seasonal variation in the resilient modulus of granular soils.

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41-2594
Coastal features of Canadian inland seas.
Martini, I.P., Canadian inland seas. Edited by I.P. Martini, Amsterdam, Elsevier, 1986, p.117-142, Refs. p.139-142.
Coastal topographic features, Permafrost distribution, Beaches, Sediments, Ice rafting, Offshore landforms, Tides, Swamps, Climatic factors, Shores, Canada.

41-2595
Seafloor morphology and sediments.
Pelletier, B.R., Canadian inland seas. Edited by I.P. Martini, Amsterdam, Elsevier, 1986, p.143-162, 21 refs.
Ocean bottom, Bottom sediment, Geomorphology, Sediment transport, Ice rafting, Sea ice, Ice melting, Bottom topography. Canada.

41-2596
Physical oceanography of Hudson Strait and Ungava Bay.
Drinkwater, K.F., Canadian inland seas. Edited by I.P. Martini, Amsterdam, Elsevier, 1986, p.237-264, Refs. p.262-264.
Sea ice distribution, Icebergs, Oceanography, Climatology, Water temperature, Salinity, Canada—Hudson Strait, Canada—Ungava Bay.

41-2597
Australia, Britain, and Antarctica.
Millar, T.B., ed, London, Australian Studies Centre, University of London, 1986, 111p., Papers of a conference held at the Australian Studies Centre, June 4, 1986. For individual papers see A-35145, A-35146, M-35144, M-35147 through M-35151.
DLC JX4084.A5A97 1986
Meetings, Natural resources, Minerals, Economic development, International cooperation.
The Antarctic Treaty entered into force on 23 June 1961, so a review conference could be held, if requested by a Contracting Party, any time after 23 June 1991. It is in anticipation of such a conference that a great deal of lobbying has been going on in order to bring changes to some of the Treaty's terms, widen its membership, publicize its activities. The specific point at issue, sometimes at the forefront of the discussion and sometimes latent, is the possibility of there being exploitable mineral resources on the continent. The purpose of the conference whose papers constitute this volume was to examine some of

these questions, especially from a British and an Australian perspective, and specifically to see whether there is a reasoned basis to the current degree of political interest in Antarctica, whether nationalistic or internationalist pressures are likely to predominate in the coming years both over resource exploitation and scientific cooperation, and whether those who use Antarctica are acting to protect its unique natural environment (Auth.)

41-2598
Forest effect on snow reserves and melting in the central taiga of northern Europe. (Vliianie lesa na zapasy i taianie snega v srednei taige evropeiskogo Severa).
Rubtsov, M.V., et al, *Lesovedenie*, Jan.-Feb. 1986, No.1, p.11-16, In Russian with English summary. 5 refs.
Dertugin, A.A., Gurtsev, V.I.
Taiga, Forest canopy, Snow cover distribution, Snow depth, Snow water equivalent, Snow melting.

41-2599
Some characteristics of structural adaptation of boreal plants to Arctic conditions. (O nekotorykh chertakh strukturnoi adaptatsii boreal'nykh rastenii k usloviiam Arktiki).
Borisovskaia, G.M., et al, *Leningrad. Universitet. Vestnik. Seriia 3 Biologiia*, Feb. 1986, No.1, p.15-22, In Russian. 14 refs.
Khitun, O.V.
Arctic landscapes, Plants (botany), Acclimatization, Introduced plants, Plant physiology, Plant tissues.

41-2600
Studies of horizontal composition of marginal vegetation in the Salair taiga. (K izucheniiu gorizontal'nogo slozheniia rastitel'nogo pokrova (na primere opushechnoi rastitel'nosti v chernevoi taige Salaira)).
Kirikova, L.A., et al, *Leningrad. Universitet. Vestnik. Seriia 3 Biologiia*, Feb. 1986, No.1, p.22-28, In Russian. 3 refs.
Sivushkova, V.Kh.
Taiga, Plant ecology, Ecosystems, Vegetation patterns, Cryogenic soils.

41-2601
Determination of the ice load on elements of marine hydraulic structures.
Gol'din, A.L., et al, *Hydrotechnical construction*, July 1986 (Pub. Jan. 87), 20(7), p.417-420, Translated from Gidrotekhnicheskoe stroitel'stvo. 9 refs.
Gladkov, M.G.
Sea ice, Ice floes, Hydraulic structures, Ice loads, Impact strength, Ice pressure, Design.

41-2602
Analytical study of powder snow avalanches.
Fukushima, Y., *Seppyo*, Dec. 1986, 48(4), p.189-197, 13 refs., In Japanese with English summary.
Avalanche modeling, Avalanche mechanics, Avalanche deposits, Avalanche erosion, Avalanche formation, Analysis (mathematics).

41-2603
Distribution of depth hoar in Honshu, Japan.
Izumi, K., et al, *Seppyo*, Dec. 1986, 48(4), p.198-206, 4 refs., In Japanese with English summary.
Akitaya, E.
Depth hoar, Ice formation, Snow surface, Snow depth, Meteorological factors, Mountains, Snow cover.

41-2604
Hydraulic conveying of snow. 8. Blocking of snow/-water mixture flow and criterion of stagnation of snow at pipe orifice.
Umemura, T., et al, *Seppyo*, Dec. 1986, 48(4), p.207-214, 10 refs., In Japanese with English summary.
Snow hydrology, Flow rate, Pipes (tubes), Fluid dynamics, Channels (waterways).

41-2605
Ice ramparts and the history of studies on them.
Sasaki, T., *Seppyo*, Dec. 1986, 48(4), p.215-221, 37 refs., In Japanese with English sumniary.
Lake ice, Ice pressure, Shoreline modification, Pressure ridges, Ice formation, Ice push.

41-2606
Circum-Arctic petroleum potential.
Green, A.R., et al, Future petroleum provinces of the World. Proceedings of the Wallace E. Pratt Memorial Conference, Phoenix, Dec. 1984. Edited by M.T. Halbouty, Tulsa, OK, American Association of Petroleum Geologists, 1986, p.101-130, Refs. p.126-130.
Kaplan, A.A., Vierbuchen, R.C.
DLC TN863.W35 1984
Petroleum industry, Hydrocarbons, Ocean bottom, Bottom sediment, Paleoclimatology, Tectonics, Geophysical surveys, Arctic Ocean.

41-2607
Alaska: potential for giant fields.
Hohler, J.J., et al, Future petroleum provinces of the World. Proceedings of the Wallace E. Pratt Memorial Conference, Phoenix, Dec. 1984. Edited by M.T. Halbouty, Tulsa, OK, American Association of Petroleum Geologists, 1986, p.131-142, 3 refs.
Bischoff, W.E.
DLC TN863.W35 1984
Petroleum industry, Hydrocarbons, Ocean bottom, Bottom sediment, Natural resources, Natural gas, Crude oil, Ice conditions, Oil recovery, Paleoclimatology, Seismic surveys, Geophysical surveys, Bering Sea, Beaufort Sea.

41-2608
Oil and gas fields in the East Coast and Arctic basins of Canada.
Meneley, R.A., Future petroleum provinces of the World. Proceedings of the Wallace E. Pratt Memorial Conference, Phoenix, Dec. 1984. Edited by M.T. Halbouty, Tulsa, OK, American Association of Petroleum Geologists, 1986, p.143-176, 19 refs.
DLC TN863.W35 1984
Hydrocarbons, Petroleum industry, Gas production, Ocean bottom, Bottom sediment, Paleoclimatology, Geophysical surveys, Structural analysis, Canada, Beaufort Sea.

41-2609
Preliminary results of the oceanographic cruise of CCGS *Sir John Franklin* to Baffin Bay and Nares Strait, September 1986.
Bourke, R.H., *U.S. Naval Postgraduate School, Monterey, CA. Interim report*, Nov. 1986, NPS-68-86-010, 23p. ADA-175 759.
Oceanographic surveys, Ice navigation, Icebreakers, Sea ice, Water temperature, Temperature distribution, Salinity, Baffin Bay.

41-2610
Drill bits for frozen fine-grained soils.
Sellmann, P.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1986, SR 86-27, 33p., ADA-178 113, 9 refs.
Mellor, M.
Drills, Frozen ground temperature, Augers, Permafrost, Sediments, Grain size, Ground ice, Rotary drilling, Temperature effects.
Successful drill bits for use in frozen sediments have certain characteristics that are not commonly found in commercial bits used for unfrozen soils and rocks. In frozen sediments, drilling characteristics and optimum bit design vary, depending on grain size, ice content, and temperature of the material. Drills for frozen *fine-grained* material (silt and clay) have specific requirements that differ from those for other frozen soil types. Important features of drills that perform well in frozen fine-grained materials include: (1) full face cutting, (2) a pilot bit that can cut and clear its cuttings, (3) appropriate cutter angles (adequate clearance angles and positive rake), (4) sharp but durable cutters, (5) unobstructed flow paths for chip clearing, and (6) stabilizing features for smooth running. Examples of successful bits are discussed and illustrated. Some were built or modified at CRREL, while others are of commercial manufacture.

41-2611
Roof blisters. Physical fitness building, Fort Lee, Virginia.
Korhonen, C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, Sr 86-35, 15p., ADA-177 801, 3 refs.
Bayer, J.
Roofs, Waterproofing, Thermal properties, Leakage, Buildings, Defects, Countermeasures.
The blisters on this 2-year old roof were first noticed one year after construction. Findings show that all blisters were built into the roof and that they will continue to develop in size and number. Currently, this roof is watertight, but leaks will occur as blisters begin to break. Rather than wait for problems, recommendations are provided for using a CRREL-designed pressure relief valve to prevent blisters from growing and ever becoming a problem.

41-2612
Morphology, hydraulics and sediment transport of an ice-covered river. Field techniques and initial data.
Lawson, D.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1986, CR 86-11, 37p., ADA-177 196, 33 refs.
Chacho, E.F., Brockett, B.E., Wuebben, J.L., Collins, C.M., Arcone, S.A., Delaney, A.J.
Icebound rivers, River flow, Ice cover effect, Sediment transport, Ice conditions, Ice cover thickness, Sampling, Water level, Frazil ice, Water temperature, Tests, Hydraulics, United States—Alaska—Tanana River.
This initial study of the ice-covered Tanana River, near Fairbanks, Alaska, attempted to 1) establish field methods for systematic and repetitive quantitative analyses of an ice-covered river's regime, 2) evaluate the instruments and equipment for sampling, and 3) obtain the initial data of a long-term study of ice cover effects on the morphology, hydraulics and sediment transport of a braided river. A methodology was established, and detailed measurements and samplings, including profiling by geophysical techniques, were conducted along cross sections of the river.

41-2613
Resilient modulus of freeze-thaw affected granular soils for pavement design and evaluation. Part 2. Field validation tests at Winchendon, Massachusetts, test sections.
Johnson, T.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1986, CR 86-12, 62p., ADA-175 708, 13 refs.
Bentley, D.L., Cole, D.M.
Soil freezing, Bituminous concretes, Freeze thaw cycles, Pavements, Soil structure, Stresses, Design, Tests.
Stress-deformation data for six granular soils ranging from sandy silt to dense-graded crushed stone were obtained from *in-situ* tests and laboratory tests. Surface deflections were measured in the *in-situ* tests, with repeated-load plate-bearing and falling-weight deflectometer equipment, when the six granular soils were frozen, thawed, and at various stages of recovery from thaw weakening. The measured deflections were used to judge the validity of procedures developed for laboratory triaxial tests to determine nonlinear resilient moduli of specimens in the frozen, thawed, and recovering states. The validity of the nonlinear resilient moduli, expressed as functions of externally applied stress and moisture tension, was confirmed by using the expressions to calculate surface deflections that were found to compare well with deflections measured in the *in-situ* tests. The tests on specimens at various stages of recovery are especially significant because they show a strong dependence of the resilient modulus on moisture tension, leading to the conclusion that predictions or *in-situ* measurements of moisture tension can be used to evaluate expected seasonal variation in the resilient modulus of granular soils.

41-2614
Evaluation of selected frost-susceptibility test methods.
Chamberlain, E.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, CR-86-14, 51p., ADA-176 125, 17 refs.
Soil freezing, Frost resistance, Frost heave, Soil mechanics, Soil classification, Soil water, Freeze thaw tests.
Three methods for determining the frost susceptibility of soils are evaluated in this report. These methods are the U.S. Army Corps of Engineers frost design soil classification system, a moisture-tension/hydraulic-conductivity test, and a laboratory freeze-thaw test. The Corps method, which is based on particle size, soil classification, and a laboratory freezing test, was found to be useful for identifying frost-susceptible soils. However, it cannot be used with confidence for determining the degree of frost susceptibility. The moisture-tension/hydraulic-conductivity test was found to be unacceptable because it required too much time and its results correlated poorly with field observations. The freeze-thaw test was determined to be the most accurate of the methods studied, including the freeze test that is a part of the Corps method. The freeze-thaw test is thoroughly described. It includes indexes of both frost-heave susceptibility (heave rate) and thaw-weakening susceptibility (CBR after thawing). It also accounts for the effects of freeze-thaw cycling and is completely automated to improve the repeatability of the test results. It is suggested that the freeze-thaw test be considered as a replacement for the Corps freezing test.

41-2615
Ice and sediment factors in the selection of Inuit water supplies from lentic sources.
Hermanson, M.H., Milwaukee, University of Wisconsin, 1985, 222p., University Microfilms order No.-DA8607544, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Aug. 1986, p.495.
Water supply, Water pollution, Icebound lakes.

41-2616
Preliminary assessment of the chemical and hydrological interaction of acidic snowmelt water with the terrestrial portion of a Canadian shield catchment.
English, M.C., et al, *Water, air, and soil pollution*, Nov. 1986, 31(1-2), p.27-34, 9 refs.
Snowmelt, Snow composition, Water pollution, Snow impurities.

41-2617
Temporal chemical variability in acid sensitive high elevation lakes.
Welch, E.B., et al, *Water, air, and soil pollution*, Nov. 1986, 31(1-2), p.35-44, 17 refs.
Spyridakis, D.E., Smayda, T.
Snowmelt, Water pollution, Snow impurities, Lake water.

41-2618
Snowmelt acidic shock study in south central Ontario.
Goodison, B.E., et al, *Water, air, and soil pollution*, Nov. 1986, 31(1-2), p.131-138, 14 refs.
Louie, P.Y.T., Metcalfe, J.R.
Snowmelt, Snow impurities, Runoff, Water pollution.

41-2619
Storage and release of major ionic contaminants from the snowpack in the Turkey Lakes watershed.
Semkin, R.G., et al, *Water, air, and soil pollution*, Nov. 1986, 31(1-2), p.215-221, 8 refs.
Jeffries, D.S.
Snowmelt, Snow impurities, Runoff, Water pollution, Rain.

41-2620
Temporal variation in aluminum speciation and concentration during snowmelt.
Hendershot, W.H., et al, *Water, air, and soil pollution*, Nov. 1986, 31(1-2), p.231-237, 9 refs.
Dufresne, A., Lalande, H., Courchesne, F.
Runoff, Snowmelt, Snow impurities, Water pollution, Ground water.

41-2621
Factors affecting snowmelt streamwater chemistry in the Black Forest (West Germany).
Feger, K.H., et al, *Water, air, and soil pollution*, Nov. 1986, 31(1-2), p.257-265, 47 refs.
Brahmer, G.
Snowmelt, Snow composition, Runoff, Water chemistry.

41-2622
Snowmelt in a boreal forest site: an integrated model of meltwater quality (SNOQUAL1).
Jones, H.G., et al, *Water, air, and soil pollution*, Nov. 1986, 31(1-2), p.431-439, 9 refs.
Snowmelt, Snow composition, Runoff, Forest soils.

41-2623
Geology and origin of the Elephant Moraine on the east antarctic ice sheet.
Faure, G., et al, *Antarctic journal of the United States*, 1985, 20(5), p.11-12, 2 refs.
Taylor, K.S.
Mapping, Ice sheets, Moraines, Glacier ablation, Antarctica—East Antarctica.
The Elephant Moraine is located on the east antarctic ice sheet about 80 km northwest of the Allan Hills. For 6 weeks during the 1984-1985 austral summer, fieldwork was conducted in the Elephant Moraine to prepare a geologic map of the moraine and to explain its origin. The geological mapping was done by classifying 47,687 clasts at 230 surveyed positions in the moraine. The results indicate that clasts having diameters greater than 16 mm are composed primarily of dolerite, basalt, sandstone, diamicton, and siltstone with minor amounts of till pellets, chert, black shale, black calcite, and coal. Clasts were seen within the ice at many locations. Excavations of these clasts suggest that they are aligned along flow lines of the ice which intersect the surface at about 40 deg. This observation, combined with the observed ablation rate, permits an estimate of the age of the Elephant Moraine. The calculation is based on the assumptions that the ablation rate is approximately equal to the vertical iceflow velocity component and that the age of the moraine is given by its length divided by the horizontal velocity component. On this basis, the age of the Elephant Moraine is approximately 30,000 years.

41-2624
Re-interpretation of glaciovolcanic interaction at Mount Takahe and Mount Murphy, Marie Byrd Land, Antarctica.
McIntosh, W.C., et al, *Antarctic journal of the United States*, 1985, 20(5), p.57-59, 6 refs.
LeMasurier, W.E., Ellerman, P.J., Dunbar, N.W.
Glacial geology, Volcanoes, Geochronology, Ice sheets, Antarctica—Marie Byrd Land, Antarctica—Murphy, Mount, Antarctica—Takahe, Mount.
Mount Takahe and Mount Murphy were reexamined in greater detail during the 1984-1985 austral summer by a snowmobile-equipped team of four geologists and two mountaineers. Outcrops representing the basal and upper portions of each volcano were visited. New field observations suggest that the former interpretation of 2,000-m fluctuations in ice-sheet level was too large. Instead, strong evidence was found that, during the eruptive histories of these volcanoes, ice-level fluctuations reached elevations only 350 to 400 m above the present surface of the west antarctic ice sheet. This paper addresses only ice-level changes that occurred during the eruptive histories of these volcanoes; larger ice-level fluctuations may have occurred before or after the volcanoes formed.

41-2625
Radiocarbon chronology of the last glaciation in McMurdo Sound, Antarctica.
Denton, G.H., et al, *Antarctic journal of the United States*, 1985, 20(5), p.59-61, 6 refs.
Stuiver, M., Austin, K.G.
Ice sheets, Age determination, Glacial hydrology, Lakes, Antarctica—Taylor Valley.
From data collected at lakes in the Taylor Valley region two models are being tested to provide a chronology of lake level fluctuation. Lake levels in nearby valleys should show similar fluctuations to those of glacial Lake Washburn by the first but not necessarily by the second model. Further, the first model predicts that rises in the level of glacial Lake Washburn should accompany Ross Sea advance, whereas the second model predicts lake-level rise coincident with ice retreat. This new model implies that summer temperatures warmer than today's characterized Taylor Valley for several intervals of high lake levels during the last global glaciation. By either model, lake levels in the Fryxell basin higher than the valley-mouth threshold and in the Bonney basin higher than the mid-valley threshold both demand a thick Ross Sea ice dam. A table shows that such high lake levels all occurred between 23,800 and 11,820 years ago in late Wisconsin time. Available radiocarbon dates are in agreement with these results.

41-2626
Continuation of glaciogeophysical survey of the interior Ross Embayment: summary of 1984-1985 field work.
Bentley, C.R., et al, *Antarctic journal of the United States*, 1985, 20(5), p.63-64.
Shabtaie, S., Schultz, D.G., Rooney, S.T.
Geophysical surveys, Ice sheets, Glacier surveys, Airborne radar, Glacier surfaces, Antarctica—Crary Ice Rise.
Surveys reported were carried out from two base camps: Crary Ice Rise and upstream B using a *Twin Otter* equipped with radar and seismic and gravity measuring gear. These programs are described and a chart showing survey tracks is included. Additionally, 8 to 10 m ice cores were collected from 17 stations and station positioning measurements for 29 stations were recorded.

41-2627
Firn studies at upstream B, West Antarctica.
Alley, R.B., et al, *Antarctic journal of the United States*, 1985, 20(5), p.65-66, 4 refs.
Bentley, C.R.
Ice cores, Firn, Ice structure, Antarctica—Siple Coast.
Descriptions are given of ice cores recovered at upstream B on Siple Coast. Firn density was measured and thin sections were prepared and photographed in the field. These will form the basis for detailed analyses since the core was partially melted during transit. An important analytical result showed that firn grain size is strongly dependent on the measuring method used; so to be meaningful, reports of grain size must be accompanied by descriptions of the methods used. Additional significant results are noted: grain size remains almost constant between the 3 and 26 m depths and above the 10 m depth firn shows a very strong vertical shape fiber.

41-2628
Land-ice/sea-ice transition in Ross Ice Shelf ice at J-9, Antarctica.
Grootes, P.M., et al, *Antarctic journal of the United States*, 1985, 20(5), p.66-68, 13 refs.
Stuiver, M.
Sea ice, Ice shelves, Isotope analysis, Oxygen isotopes.
The study was made from the lower part of the J-8 ice core near the bottom of Ross Ice Shelf. Details of the analytical methods and results are described. The change in O-18 values between land ice and sea ice dating from the last glacial period is quite sharp. At 5.860 m above the bottom of the shelf ice, sea ice constitutes more than 97% of the ice mass; at 6.005 m the percentage drops to 1%. Comments are made on the capacity of sea water to penetrate the ice at a depth 6 m above the bottom of the shelf, ice growth rate, and mixing of meltwater with sea water.

41-2629
Nitrate variability in South Pole and Ross Ice Shelf snow and firn.
Laird, C.M., et al, *Antarctic journal of the United States*, 1985, 20(5), p.68-69, 5 refs.
Zeller, E.J., Dreschhoff, G.A.M., Armstrong, T.P.
Snow composition, Firn, Periodic variations, Antarctica—Ross Ice Shelf, Antarctica—South Pole.
The study sought to gain enough nitrate deposition data to analyze the concentration for variance within single-year layers. Analyses were made on site, usually within a few minutes after collection. The analysis of variance indicates that nitrate concentration within yearly layers is significantly less than the average variance between yearly layers, indicating a systematic and distinguishable variation through time. Some of the highest concentrations were found on sastrugi. There were also strong peaks of nitrate concentration associated with summer depositions and lower values during winter. Nitrate flux varies widely throughout the year but peaks in the winter months.

41-2630
Uranium-series dating of Allan Hills ice.
Fireman, E.L., *Antarctic journal of the United States*, 1985, 20(5), p.70-71, 7 refs.
Ice sheets, Radioactive isotopes, Radioactive age determination, Antarctica—Allan Hills.
Uranium-238 decay-series nuclides dissolved in antarctic ice samples were measured. Ice from the Cul de Sac site which has a high concentration of fine volcanic glass shards, has high radium-226, thorium-230, and uranium-234 activities but low uranium-238 activities compared to antarctic ice samples without volcanic shards. The radium-226, thorium-230, and uranium-234 excesses are in proportion to the shard content. The uranium-238 decay-series results are consistent with the idea that alpha decay products recoiled into the ice from the fine shards. Using this type of dating, it was determined that the age of the Cul de Sac ice is 220,000 years.

41-2631
Using an ice core to characterize the climatic history of Antarctica.
Mayewski, P.A., et al, *Antarctic journal of the United States*, 1985, 20(5), p.71-72.
Lyons, W.B.
Ice cores, Climatic changes, Radio echo soundings, Snow composition.
Between 20 Nov. and 14 Dec. 1984, a remote tent camp was operated in the Dominion Range on an ice-covered massif located at the confluence of the heads of the Beardmore and Mill Glaciers in the Transantarctic Mountains. The main task at the site was to retrieve an ice core from which chemical and physical time-series will be made available to help in assessing: (1) current stability of the east antarctic ice sheet, (2) current models concerning the recent glacial history of the Transantarctic Mountains, (3) the presence of relatively high frequency climatic signals, and (4) the possible relationships between volcanic and/or solar activities and climatic change. Shallow snowpits were dug at several sites around the drill site, a 6-m snowpit was dug immediately adjacent to the drill site, and fresh and old surface snow samples were collected throughout the study area. The snowpits will provide samples that can be used to calibrate chemical analyses, to replicate studies, to assess seasonal signals in the chemical species and to collect other data sets including a temperature profile, density, and stratigraphy.

41-2632
Composition of ancient atmosphere, based on ice-core analyses.
Stauffer, B., *Antarctic journal of the United States*, 1985, 20(5), p.72-73, 7 refs.
Atmospheric composition, Carbon dioxide, Ice cores, Gas inclusions.
Air entrapped in bubbles of cold ice has essentially the same composition as the atmosphere at the time of bubble formation. The main purpose of this investigation is to determine the age of the enclosed gas and to analyze the air extracted from ice samples of different age. Based on such measurements, the history of the atmospheric composition, especially the history of the carbon dioxide and methane concentrations, can be reconstructed. Details of the field work and laboratory analyses conducted during 1983-1985 are provided.

41-2633
International antarctic glaciological program activities at South Pole Station and Vostok.
Lorius, C., *Antarctic journal of the United States*, 1985, 20(5), p.73-74, 3 refs.
Ice cores, Drill core analysis, International cooperation, Antarctica—Amundsen-Scott Station, Antarctica—Vostok Station.
The South Pole Station work consisted mainly of the recovery and processing of samples from an electromechanical drill hole 143 m deep, drilled the previous season. The field work also included the recovery of the French deep-drilling ("climatopic") equipment previously tested at South Pole Station. The work in Vostok, performed in cooperation with Soviet scientists, consisted mainly of surface sampling from pits and shallow cores and of processing samples from a 2,083-m deep ice core obtained by Soviet scientists the previous seasons.

41-2634
Shear heating instabilities of large ice sheets.
Yuen, D.A., et al, *Antarctic journal of the United States*, 1985, 20(5), p.74-75, 2 refs.
Schubert, G., Saari, M.R.
Ice sheets, Shear stress, Ice deformation, Thermal effects.
Motions of large ice sheets represent an intrinsically thermomechanical problem, because the shear-deformation of ice is strongly controlled by its temperature-dependent rheology. Accordingly, viscous dissipation can play an important role modifying the movement of ice sheets. The present research efforts are concerned with understanding the nonlinear, thermomechanical responses of large ice sheets to different types of perturbations. In particular, the focus is on quantifying the timescales for the nonlinear growth of shear-heating instability involving thickened ice layers due to sudden climatic deterioration or the climatic warming associated with the Holocene glacial epoch and the increase of atmospheric CO_2 in the last 100 years.

41-2635
Amundsen Sea sediment coring.
Kellogg, T.B., et al, *Antarctic journal of the United States*, 1985, 20(5), p.79-81, 8 refs.
Kellogg, D.E., Hughes, T.J.
Cores, Sediments, Glacier mass balance, Antarctica—Pine Island Bay.
As part of a long-term effort to evaluate antarctic glacial history using marine sediments, sediment coring operations were conducted in the Amundsen Sea during January 1985. The objective was to obtain cores from which it could be determined if grounded ice formerly occupied the Amundsen Sea continental shelf and, if so, the chronology of ice-sheet advances and retreats. Because the cores were collected in plastic liners, sampling on shipboard was limited to core tops and bottoms. Preliminary impressions, gained from smear-slide analyses and visual inspection of the sediments suggest that: (1) sediments in the Amundsen Sea, especially in troughs such as the one fronting Pine Island Glacier, are much thicker than anticipated; (2) microfossil remains, especially diatoms, occur in very low abundance in Pine Island Bay cores, but abundances are higher elsewhere; (3) trough sediments are relatively fine-grained, soft, silty clays, but sediments from shallower locations are often

compact, diatomaceous, glacial-marine deposits, and (4) no unequivocal basal tills were recovered.

41-2636
Short-range forecasting of ice-bound state for the lower Danube River. [K metodike kratkosrochnogo prognoza dat ustanovleniia ledostava na Nizhnem Dunae],
Shcherbak, A.V., *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.217, p.155-160, In Russian. 2 refs.
River ice, Freezeup, Ice conditions, Ice formation, Ice growth, Icebound rivers, Ice forecasting.

41-2637
Forecasting fog dissipation time and visibility improvement with stratus conditions. [Prognoz vremeni rasseianiia tumana i uluchsheniia vidimosti pri St],
Koshelenko, I.V., *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.219, p.50-58, In Russian. 6 refs.
Cloud dissipation, Fog dispersal, Snow cover effect, Visibility.

41-2638
Possibility of forecasting the intensity of ice accretion. [O vozmozhnosti prognozirovaniia intensivnosti otlozheniia gololeda],
Volevakha, V.A., et al, *Ukrainskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.219, p.58-67, In Russian. 9 refs.
Volkonskaia, N.K., Bashkirova, L.E.
Icing, Ice accretion, Meteorological factors, Forecasting.

41-2639
Mathematical modeling of solute segregation and redistribution during freezing in peat and overlying water.
Li, X.-M., Ann Arbor, University of Michigan, 1985, 119p., University Microfilms order No.DA8600488, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, May 1986, p.3937.
Water chemistry, Freezing, Peat, Soil chemistry.

41-2640
Palsa formation in North-Central Alaska.
Hinkel, K.M., Ann Arbor, University of Michigan, 1986, 217p., University Microfilms order No.-DA8612536, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Sep. 1986, p.969.
Frost mounds, Ground ice, Ice crystals.

41-2641
Continuum mixture theory with an application to turbulent snow, air flows and sedimentation.
Decker, R.A., Missoula, Montana State University, 1986, 110p., University Microfilms order No.-DA8613703, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Oct. 1986, p.1652.
Blowing snow, Turbulent flow.

41-2642
Free boundary problems.
Stojanovic, S.D., Evanston, Northwestern University, 1986, 93p., University Microfilms order No.-DA8621874, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Dec. 1986, p.2466.
Ice formation, Freezing, Channels (waterways).

41-2643
Cloud tunnel study on the riming of snowflakes and a theoretical investigation on the capture efficiency of ice crystals by large cloud drops.
Lew, J.K., Los Angeles, University of California, 1985, 346p., University Microfilms order No.DA8519122, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Jan. 1986, p.2349.
Cloud chambers, Snowflakes, Cloud droplets.

41-2644
Scattering and attenuation of millimeter wavelength radiation by snow.
O'Brien, S.G., University Park, New Mexico State University, 1985, 138p., University Microfilms order No.DA8519958, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Jan. 1986, p.2350.
Scattering, Snowflakes, Attenuation.

41-2645
Arctic route geotechnical characterization and analysis: a systems approach.
Vita, C.L., Seattle, University of Washington, 1985, 271p., University Microfilms order No.DA8521675, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Jan. 1986, p.2406.
Route surveys, Settlement (structural), Landforms.

41-2646
Ice blasting. [Vzryvanie l'da],
Tavrizov, V.M., Moscow, Nedra, 1986, 136p., In Russian with abridged English table of contents enclosed. 41 refs.
Icebound rivers, Ice cover thickness, Ice blasting, Ice jams, Hydraulic structures, Ice pressure, Ice loads, Flood control.

41-2647
Increasing the thermoinsulative properties of lightweight concrete panels. [Povyshenie teplozashchitnykh svoĭstv panelei iz legkogo betona],
Natsievskiĭ, IU.D., Kiev, Budivel'nik, 1986, 88p., In Russian with English table of contents enclosed. 72 refs.
Concrete aggregates, Lightweight concretes, Cements, Prefabrication, Panels, Walls, Thermal insulation, Thermal stresses, Residential buildings, Frost resistance, Industrial buildings.

41-2648
Genetic formula for calculating maximum discharge of rain floods in the Lena River basin. [Geneticheskaia formula dlia rascheta maksimal'nykh raskhodov dozhdevykh pavodkov v basseine r. Leny],
Nemerinskaia, Zh.N., *Dal'nevostochnyĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.126, p.3-8, In Russian.
River basins, Permafrost distribution, Runoff, Floods.

41-2649
Improving the map of spring-flood runoff layer of the Chukchi Peninsula rivers. [Utochnenie karty sloia stoka vesennego polovod'ia rek Chukotki],
Boiarintsev, E.L., *Dal'nevostochnyĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.126, p.8-17, In Russian. 16 refs.
River basins, Permafrost distribution, Permafrost beneath rivers, Maps, Floods, Runoff.

41-2650
Results of studying avalanches in the Magadan region. [Rezul'taty issledovaniĭ lavin na territorii Magadanskoĭ oblasti],
Korenev, V.G., *Dal'nevostochnyĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.126, p.63-72, In Russian. 4 refs.
Avalanche formation, Avalanche engineering, Avalanche triggering, Snow depth, Snow cover distribution, Snow physics, Slope processes, Vegetation factors.

41-2651
On the width and motion of a rain/snow boundary.
Stewart, R.E., et al, *Water resources research,* Feb. 1987, 23(2), p.343-350, 13 refs.
McFarquhar, G.M.
Snow melting, Rain, Snowfall, -dary layer, Snow density, Snowflakes, Precipita (meteorology), Models.

41-2652
Second Workshop on Ice Penetration Technology, 1986.
Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986, *U.S. Army Cold Regions Research and Engineering Laboratory,* Oct. 1986, SR 86-30, 659p., ADB-108 529, Refs. passim. For individual papers see 41-2653 through 41-2681.
Ice cover strength, Penetration tests, Military operation, Sea ice, Ice mechanics, Meetings, Design, Ice cover thickness, Models, Cavitation.
On 16-19 June 1986 the Naval Surface Weapons Center (NSWC) and the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) co-hosted the Second Workshop on Ice Penetration Technology at the Naval Postgraduate School in Monterey, California. Since the first workshop at CRREL two years ago, many notable accomplishments had occurred regarding ice penetration and related subjects. The objectives of the workshop were to provide a forum at which to present and discuss these findings and identify areas requiring more work. Papers were presented on the following general topics: environmental data needs, ice measurement techniques, ice statistics, ice mechanics, scale model tests, field tests, analytical modeling, design and hardware, alternate methods, airborne ASW and submarines.

41-2653
Sea water density variation in the arctic region and submarine operational implications.
Frost, M.E., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.1-30, ADB-108 529, 11 refs.
Submarines, Sea water, Density (mass/volume), Design criteria, Ice cover effect, Seasonal variations, Salinity, Water temperataure, Distribution, Arctic Ocean.

41-2654
Discrimination of different arctic snow and sea ice surfaces using an airborne passive microwave imager.
Welsh, J.P., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.31-56, ADB-108 529, 8 refs.
Sea ice, Ice surface, Snow surface, Remote sensing, Radiometry, Microwaves, Airborne equipment, Photography.

41-2655
Modeling the electromagnetic property trends in sea ice and example impulse radar and frequency-domain electromagnetic ice thickness sounding results.
Kovacs, A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, MP 2197, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.57-133, ADB-108 529, Refs. p.131-133.
Morey, R.M., Cox, G.F.N., Valleau, N.C.
Ice cover thickness, Electromagnetic properties, Remote sensing, Sea ice, Ice models, Dielectric properties, Electrical resistivity, Brines, Ice physics, Analysis (mathematics).
Two-phase dielectric mixing model results are presented showing the electromagnetic properties of sea ice versus depth. The modeled data are compared with field measurements and show comparable results. It is also shown how the model data can be used in support of impulse radar and airborne electromagnetic remote sensing of sea ice.

41-2656
Role of sea ice motion in ice penetration.
Denner, W.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.135-153, ADB-108 529, 10 refs.
Lewis, J.K.
Ice mechanics, Penetration, Sea ice, Ice cover thickness, Ice cover strength, Ice temperature, Ice salinity, Ice dating, Freeze thaw cycles, Wind factors.

41-2657
Forecasting ice thickness and concentration in the Arctic using a numerical model.
Preller, R.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.155-164, ADB-108 529, 11 refs.
Posey, P.G., Pollak, K.D., Clancy, R.M.
Ice cover thickness, Ice conditions, Sea ice distribution, Ice models, Ice forecasting, Mathematical models, Hydrodynamics, Thermodynamics, Ocean currents, Drift, Arctic Ocean.

41-2658
Under-ice topography of the Arctic Basin as recorded in 1958 and 1970: a comparison.
McLaren, A.S., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.165-191, ADB-108 529, 23 refs.
Ice bottom surface, Surface properties, Topographic features, Subglacial observations, Submarines, Data processing, Statistical analysis, Sea ice.

41-2659
Polar statistics and prediction models—application to operational sea ice forecasting.
Benner, D.A., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.193-206, ADB 108 529, 23 refs.
Ice forecasting, Sea ice distribution, Ice conditions, Military operation, Ice navigation, Ice models, Climatic factors, Statistical analysis.

41-2660
Use of ice thickness data derived from aerial photographs to predict the occurrence of thin ice features.
Farmer, L.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.207-223, ADB-108 529, 6 refs.
Eppler, D.T., Welsh, J.P., Full, W.E.
Ice cover thickness, Ice conditions, Aerial surveys, Ice forecasting, Photography, Seasonal variations.

41-2661
Ice thickness measurements in the Arctic Ocean—a preliminary assessment based on digitization of submarine under ice sonar data.
McLaren, A.S., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.225-235, ADB-108 529, 7 refs.
Bourke, R., Weaver, R.
Ice cover thickness, Ice bottom surface, Acoustic measurement, Sea ice distribution, Subglacial observations, Statistical analysis, Ice structure, Polynyas, Ice navigation, Arctic Ocean.

41-2662
Variability of Arctic sea ice drafts.
Tucker, W.B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, MP 2198, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.237-256, ADB-108 529, 12 refs.
Hibler, W.D., III.
Ice cover strength, Penetration, Ice cover thickness, Echo sounding, Sea ice distribution, Ice conditions, Climatic factors, Airborne equipment, Seasonal variations.

41-2663
On the profile properties of undeformed first-year sea ice.
Cox, G.F.N., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, MP 2199, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.257-330, ADB-108 529, Refs. p.325-330.
Weeks, W.F.
Ice mechanics, Ice structure, Ice cover strength, Ice composition, Ice deformation, Ice cover thickness, Ice temperature, Ice salinity, Ice sheets, Sea ice, Drift.

41-2664
Comparison of the compressive behavior of naturally and laboratory-grown saline ice.
Richter-Menge, J.A., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, MP 2200, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.331-350, ADB-108 529, 23 refs.
Ice salinity, Compressive properties, Ice strength, Stresses, Strains, Temperature effects, Tests, Ice crystal structure, Ice mechanics, Sea ice.
A series of unconfined and confined constant strain rate compression tests were performed on columnar, saline ice samples grown in the laboratory. The tests were done at three temperatures (-3, -5 and -10 C) and two strain rates (2 1/50 and 1/1000 per s). The confined compression tests were conducted in a conventional triaxial cell designed to ramp the confining pressure in constant proportion to the axial stress being applied to the cylindrical sample. The ratio of the confining pressure to the axial stress in our tests was 0.25, 0.50 or 0.75. This paper summarizes the results of these tests and compares them to previously obtained first-year sea ice test data. We also compare the crystal structure of the saline ice grown in the laboratory and naturally occurring first-year sea ice. In general, the structural composition and mechanical behavior of the two ice types are similar, indicating that the results obtained from tests on columnar saline ice grown in the laboratory reflect the behavior of first-year sea ice.

41-2665
Confined compressive strength of saline ice at intermediate strain rates.
Blair, S.C., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.351-364, ADB-108 529, 4 refs.
Ice strength, Compressive properties, Ice salinity, Strains, Projectile penetration, Ice mechanics, Pressure, Temperature effects, Sea ice, Stresses.

41-2666
Behavior of saline ice under explosive loading and its application in understanding rigid body penetration of sea ice.
Larson, D.B., *U.S. Army Cold Regions Research and Engineering Laboratory Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.365-384, ADB-108 529, 3 refs.
Ice strength, Explosion effects, Penetration tests, Loads (forces), Ice salinity, Sea ice, Experimentation, Shear strength.

41-2667
Ice penetrator scale model and full scale test results.
Rychnovsky, R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.385-414, ADB-108 529, 7 refs.
Ice cover strength, Penetration tests, Military operation, Velocity, Impact strength, Models.

41-2668
Small-scale projectile penetration in saline ice.
Cole, D.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, MP 2201, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.415-438, ADB-108 529, 1 ref.
Steves, H.K.
Projectile penetration, Ice salinity, Ice deformation, Ice cracks, Impact strength, Tests, Fracturing, Military operation, Models.
This paper summarizes the results of a testing program to examine the deformation and fracture associated with projectile penetration in saline ice. Projectiles 25.4 mm in diameter were fired into a naturally-grown saline ice sheet in a test pool at USA CRREL. The tests employed three nose shapes: full cone, truncated cone and full flat. The impact velocities produced behavior ranging from slight penetration to perforation of the 210-280 mm thick ice sheet.

41-2669
Low-velocity impact penetration of an ice layer over water.
Schmidt, R.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.439-449, ADB-108 529, 3 refs.
Housen, K.R.
Floating ice, Penetration tests, Ice cover thickness, Impact strength, Velocity.

41-2670
Ice penetrating buoy tests.
Iddings, D.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.451-460. ADB-108 529.
Lord, J.B.
Ice cover strength, Penetration tests, Ice cover thickness, Ice bottom surface.

41-2671
Feasibility tests of autonomous antenna deployment through ice.
Hrubes, J.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.461-471. ADB-108 529.
Ice cover strength, Penetration tests, Floating ice, Thermal effects, Chemical properties, Telecommunication.

41-2672
Kinematic model of ice penetration with lateral loading.
Young, C.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.473-479. ADB-108 529.
Young, E.R.
Ice cover strength, Penetration tests, Loads (forces), Cavitation, Models, Sea ice, Forecasting, Military operation.

41-2673
Use and validation of cavity expansion load models in determining structural response of penetrators into ice targets.
Kipp, R.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.481-493, ADB-108 529, 7 refs.
Longcope, D.B.
Penetration tests, Ice cover strength, Loads (forces), Cavitation, Military operation, Ice structure, Models, Time factor, Stresses, Strains.

41-2674
Thick ice penetrator.
Swearengen, J.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.495-520. ADB-108 529.
Rychnovsky, R.E.
Penetration tests, Ice cover thickness, Military operation, Impact strength, Submarines.

41-2675
Design considerations for a kinetic energy ice penetrating tactical sonobuoy.
Everett, R.N., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.521-547. ADB-108 529.
Deakins, J.H.
Penetration tests, Acoustic measurement, Ice cover thickness, Ice strength, Impact strength, Design, Aircraft.

41-2676
Portable hot water ice drill.
Tucker, W.B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, MP 2202, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.549-564, ADB 108 529, 4 refs.
Govoni, J.W., Garfield, D.E., Tart, R.W.
Ice drills, Thermal drills, Penetration tests, Ice cover thickness, Offshore drilling, Water temperature, Offshore structures, Equipment.

41-2677
Thermal hole opener.
Hansen, D.P., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.565-574. ADB-108 529.
Ice cutting, Sea ice, Thermal drills, Heating, Penetration, Ice cover thickness.

41-2678
Some developments in shaped charge technology.
Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.575-604, ADB-108 529, 16 refs.
Projectile penetration, Cavitation, Ice cover, Frozen ground strength, Military operation, Materials, Design, Penetration tests.
Shaped charges can be used to penetrate solid materials, or to enhance the penetrating capabilities of kinetic energy projectiles. This report reviews the design and performance characteristics of conventional shaped charges and it describes the development of binary shaped charges that remain non-explosive until shortly before use. The technical review outlines the basic principles of shaped charges and gives an idea of the penetration depth and hole diameter for typical charges firing into various target materials. The effects of standoff distance, cone diameter, cone angle, cone thickness, cone material and explosive type are described. Special attention is given to the penetration of frozen ground and ice. Current development work on binary shaped charges is discussed, and results of recent tests on permafrost penetration are given.

41-2679
Ice penetration drill/anchor using ultrahigh-pressure waterjets.
Echert, D.C.S., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.605-617, ADB-108 529, 7 refs.
Kollé, J.J.
Anchors, Penetration, Ice drills, Hydraulic jets, Ice strength, Iceberg towing, Subglacial observations, Drilling, Pressure.

41-2680
Water jet ice penetration.
Gregory, W.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.619-622. ADB-108 529.
Greenspan, E.
Ice cover, Penetration tests, Hydraulic jets, Ice structure, Models.

41-2681
Project ice buster.
Miles, R.T., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1986, SR 86-30, Workshop on Ice Penetration Technology, 2nd, Monterey, CA, June 16-19, 1986. Proceedings, p.623-643, ADB-108 529, 4 refs.
Crawford, W.W.
Ice cover, Explosives, Penetration tests, Ice strength, Ice cracks, Sea ice, Design criteria, Cavitation, Fracturing.

41-2682
Land/ocean correlations during the last interglacial/glacial transition, Baffin Bay, northwestern North Atlantic: a review.
Andrews, J.T., et al, *Quaternary science reviews*, 1985, 4(4), p.333-355, Refs. p.353-355.
Ice cores, Climatic changes, Pleistocene, Glaciation.

41-2683
Cataclysmic Late Pleistocene flooding from glacial Lake Missoula: a review.
Baker, V.R., et al, *Quaternary science reviews*, 1985, 4(1), p.1-41, Refs. p.35-41.
Bunker, R.C.
Glacial lakes, Ice dams.

41-2684
Stratigraphic, isotopic, and mineralogical evidence for an early Holocene thaw unconformity at Mayo, Yukon Territory.
Burn, C.R., et al, *Canadian journal of earth sciences*, June 1986, 23(6), p.794-803, 44 refs. With French summary.
Michel, F.A., Smith, M.W.
Ground ice, Thermokarst, Lacustrine deposits, Paleoclimatology.

41-2685
Professor Mathews, outburst floods, and other glaciological disasters.
Clarke, G.K.C., *Canadian journal of earth sciences*, June 1986, 23(6), p.859-868, 43 refs. With French summary.
Glacial lakes, Ice dams, Floods.

41-2686
On deglaciation-induced perturbations of the geoid.
Wolf, D., *Canadian journal of earth sciences*, Feb. 1986, 23(2), p.269-272, 20 refs. With French summary.
Glacial lakes, Isostasy, Glaciation.

41-2687
Analysis of frozen sand beams.
Wen, R.K., et al, Recent advances in engineering mechanics and their impact on civil engineering practice. Proceedings of the 4th Engineering Mechanics Division Specialty Conference, West Lafayette, IN, May 23-25, 1983, Vol.2. Edited by W.F. Chen and A.D.M. Lewis, New York, NY, American Society of Civil Engineers, 1983, p.790-793, 4 refs.
Soo, S., Andersland, O.B.
Frozen ground mechanics, Soil creep, Sands, Excavation, Concrete admixtures, Cement admixtures, Analysis (mathematics), Mine shafts, Tunneling (excavation).

41-2688
Do diatoms beneath the Greenland Ice Sheet indicate interglacials warmer than present.
Harwood, D.M., *Arctic*, Dec. 1986, 39(4), p.304-308, With French summary. 13 refs.
Subglacial observations, Plankton, Climatic changes, Ice cores, Drill core analysis, Pleistocene, Greenland.

41-2689
Residual snow cover in the Canadian Arctic in July: a means to evaluate the regional maximum snow depth in winter.
Lauriol, B., et al, *Arctic*, Dec. 1986, 39(4), p.309-315, With French summary. 38 refs.
Carrier, Y., Beaudet, H., Binda, G.
Snow depth, Snow cover distribution, Snowfall, Climatic factors, Seasonal variations, Models.

41-2690
Potential ecological effects of the proposed GRAND canal diversion project on Hudson and James Bays.
Milko, R., *Arctic*, Dec. 1986, 39(4), p.316-326, With French summary. 49 refs.
Channels (waterways), Water flow, Ice conditions, Environmental impact, Plankton, Ice formation, Ice breakup, Climatic changes, Ecology, Canada—Hudson Bay, Canada—James Bay.

41-2691
Management of Arctic marine transportation: a Canadian perspective.
McRae, D.M., *Arctic*, Dec. 1986, 39(4), p.350-359, With French summary. 13 refs.
Marine transportation, Environmental protection, Legislation, Northwest Passage.

41-2692
U.S.-Canada Arctic policy forum: impressions from the American co-chair.
Friedheim, R.L., *Arctic*, Dec. 1986, 39(4), p.360-367, With French summary. 26 refs.
Northwest Passage, Legislation, Natural resources, International cooperation, Economic development, Beaufort Sea.

41-2693
Freezing technique for sampling skeletal, structureless forest soils.
Froehlich, H.A., et al, *Soil Science Society of America. Journal*, Nov.-Dec. 1986, 50(6), p.1640-1642, 7 refs.
Miles, D.W.R.
Soil freezing, Forest soils, Sampling, Particle size distribution, Organic soils.

41-2694
Development of the low power data logger for the antarctic use.
Katsuta, Y., et al, *Antarctic record*, Nov. 1986, 30(3), p.175-188, In Japanese with English summary and captions. 3 refs.
Terai, K.
Electric power, Remote sensing.
A project, "Development of Unmanned Observation System Utilizing Natural Energy" was carried out to obtain fundamental knowledge and techniques of unmanned observation systems in Antarctica from 1982 to 1984. A data logger for discontinuity data of long time range was developed as a part of the project. The data logger is required to achieve very low consumption of electricity and long-term recording period because it is very difficult to obtain large electric power constantly. A new data logger system has been designed and tested in Antarctica. Good results have been obtained experimentally during the 26th and 27th JARE, 1984-1986. (Auth. mod.)

41-2695
Report on the geological, geomorphological, and geodetic field party in the Sör Rondane Mountains, 1986 (JARE-27).
Moriwaki, K., et al, *Antarctic record*, Nov. 1986, 30(3), p.246-281, 4 refs.
Snow vehicles, Traverses, Crevasses, Frost heave, Snow surface, Ice surface, Antarctica—Sör Rondane Mountains.
The 27th Japanese Antarctic Research Expeditions (JARE-27) carried out geological, geomorphological and geodetic field work in the central Sör Rondane Mountains from Jan. 5 to Feb. 6, 1986. Field work in the vast and heavily crevassed area was accomplished by two parties of four persons each, using ten oversnow vehicles. This report gives details of the operation including logistics, a summary of the field work, and information on the weather and the surface condition of snow and ice observed in this period. (Auth. mod.)

41-2696
Test results: performance of two ice-retardant overlays. *Better roads*, Dec. 1986, 56(12), p.30-33.
Ice prevention, Road icing, Winter maintenance.

41-2697
Oxygen-18 studies of snowmelt runoff in a small Precambrian shield watershed: implications for stream-water acidification in acid-sensitive terrain.
Bottomley, D.J., et al, *Journal of hydrology*, Nov. 1986, 88(3-4), p.213-234, 17 refs.
Craig, D., Johnston, L.M.
Snowmelt, Runoff, Isotope analysis, Ground water.

41-2698
Hydrological characteristics of an Alpine glacial valley in the North Italian Dolomites.
Van de Griend, A.A., et al, *Journal of hydrology*, Nov. 1986, 88(3-4), p.275-299, 26 refs.
Seyhan, E., Engelen, G.B., Geirnaert, W.
Hydrogeology, Ground water, Isotope analysis.

41-2699
Snow levels and amounts in the mountains of southern California.
Minnich, R.A., *Journal of hydrology*, Dec. 1986, 89(1-2), p.37-58, 32 refs.
Snowfall, Snow accumulation, Climatology, United States—California—San Bernardino Mountains.

41-2700
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Concrete structures, Cooling rate, Temperature measurement, Concrete strength, Analysis (mathematics).

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Ice sheets, Glacier flow, Pleistocene, Models.

41-2761
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Dewez, V.
Pingos, Ice lenses, Ground ice, Frost mounds, Swamps, Lacustrine deposits.

41-2762
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Dujmovic, S.
Blowing snow, Impact, Falling bodies, Snowfall, Air flow.

41-2763
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Remote sensing, Spaceborne photography, Glacier surveys, Snow cover distribution, Mountain glaciers.

41-2764
National needs in Arctic research.
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Research projects, Polar regions, Legislation.

41-2765
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Vinson, T.S., Johnson, E.G.
Fines, Construction materials, Frost resistance, Roads.

41-2766
Classification and laboratory testing of artificially frozen ground.
Sayles, F.H., et al, *Journal of cold regions engineering*, Mar. 1987, 1(1), MP 2227, p.22-48, Refs. p.45-48.
Strain tests, Frozen ground strength, Soil freezing, Artificial freezing, Salinity.
The proposed guidelines for classifying artificially frozen ground are based on the Unified Soil Classification System, with the addition of salinity evaluation. For testing frozen soils in the laboratory, it is recommended that: axial loading strain rates be 0.1 and 1%/min; constant stress loadings for creep testing be 70, 50, 30, and 10% of the strength values obtained from the constant strain rate test performed at 1%/min; temperatures of the tests be -2, -5, and -10 C; the test specimen shape and size be a right circular cylinder with height-to-diameter ratio of 2 or more and a diameter be at least 10 times that of the largest soil particle size; specimen end caps be lubricated where possible, and the test loading system have a stiffness at least five times that of the test specimen.

41-2767
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Winter concreting, Water cement ratio.

41-2768
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Wylie, G.S.
Filters, Icing, Blowing snow, Equipment.

41-2769
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Quarries, Cold weather operation, Dust control, Ventilation, Subpermafrost ground water, Cold weather tests.

41-2770
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Quarries, Cold weather operation, Ventilation, Wind factors, Analysis (mathematics).

41-2771
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Rebristyĭ, B.N., Vakulenko, S.N., Glushkin, A.A.
Mining, Roads, Quarries, Transportation, Cold weather operation, Dust control.

41-2772
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Mining, Quarries, Dust control, Ventilation, Subpermafrost ground water.

41-2773
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Mining, Quarries, Dust control, Cold weather tests.

41-2774
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Mining, Frost protection, Quarries, Coal, Dust control, Drills, Ventilation, Wettability.

41-2775
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Lichens, Forest tundra, Mosses, Mountain soils, Cryogenic soils, Plant ecology, Tundra.

41-2776
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Likhachev, A.IU.
Mosses, Mountain soils, Moraines, Plant ecology, Plant physiology, Alpine tundra, Soil formation, USSR—Khibiny Mountains.

41-2777
Analysis of endemic species of moss flora in Central Asia. [Analiz endemichnykh vidov flory mkhov Srednet Azii],
Mamatkulov, U.K., Brio-likhenologicheskie issledovaniia v SSSR (Brio-lichenologic investigations in the USSR) edited by R.N. Shliakov, Apatity, 1986, p.39-49, In Russian. 27 refs.
Biomass, Alpine landscapes, Plant ecology, Mosses, Distribution, Cryogenic soils.

41-2778
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Tundra, Forest tundra, Mountain soils, Lichens, Plant ecology, Ecosystems.

41-2779
Lichen flora in the fir-spruce forests on the eastern slopes of the central Sikhote Alin Mountains. [Likhenoflora pikhtovo-elovykh lesov vostochnykh sklonov Srednego Sikhote-Alinia],
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Kniazheva, L.A.
Alpine landscapes, Vegetation patterns, Lichens, Plant ecology, Ecosystems, USSR—Sikhote Alin.

41-2780
Ultimate masses of large-size blocks transported by draw-plates and pneumatic rollers. [Predel'nye massy superblokov peremeshchaemykh volokom i na pnevmokatkakh],
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Baranov, N.N., Nosyrev, G.IA., Ivanov, A.P.
Snow roads, Modular construction, Ice roads, Transportation, Air cushion vehicles, Petroleum industry.

41-2781
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Shevchenko, V.I., Antonova, E.V.
Petroleum industry, Urban planning, Pipelines, Thermal insulation, Cellular plastics.

41-2782
Classification of means of ballasting and fastening pipelines. [Sistematizatsiia sredstv ballastirovki i zakrepleniia truboprovodov],
Vasil'ev, N.P., et al, *Stroitel'stvo truboprovodov*, Dec. 1986, No.12, p.20-21, In Russian.
Reshetnikov, A.D.
Gas pipelines, Permafrost beneath structures, Concrete structures, Supports, Anchors.

41-2783
Comparative efficiency of coal transportation by railroad and by hydraulic pipelines. [Sravnitel'naia effektivnost' zheleznodorozhnogo i gidrotruboprovodnogo transporta energeticheskogo uglia],
Faĭnveĭts, V.IA., et al, *Stroitel'stvo truboprovodov*, Dec. 1986, No.12, p.22-24, In Russian.
Filippova, P.V.
Coal, Transportation, Pipelines, Railroads, Electric power.

41-2784
Combined scientific and technical preparation for economic development of the Yamal Peninsula. [Osvoeniiu IAmala—kompleksnuiu nauchno-tekhnicheskuiu podgotovku], *Stroitel'stvo truboprovodov*, Jan. 1987, No.1, p.31-34, In Russian.
Natural gas, Gas pipelines, Hot oil lines, Transportation, Permafrost beneath structures, Polar regions, Petroleum industry.

41-2785
Automated navigational aids for icebreaking cargo ships. [Sredstva avtomatizatsii sudovozhdeniia dlia ledokol'no-transportnykh sudov],
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IAkushenkov, A.A.
Ice navigation, Cargo, Ships, Measuring instruments.

41-2786
Errors of slaved gyrocompasses when navigating in high latitudes. [Pogreshnosti korrektiruemykh girokompasov pri plavanii v vysokikh shirotakh],
Chichinadze, M.V., *Sudostroenie*, Feb. 1987, No.2, p.34-35, In Russian. 7 refs.
Ice navigation, Measuring instruments, Accuracy, Icebreakers.

41-2787
Evaluation of cold resistance of shipbuilding steels using methods of mathematical statistics. [Otsenka khladostoikosti sudostroitel'nykh stalei metodami matematicheskoi statistiki],
Sokolov, A.O., *Sudostroenie*, Feb. 1987, No.2, p.42-43, In Russian. 2 refs.
Ships, Construction materials, Frost resistance, Steels, Ice navigation, Analysis (mathematics).

41-2788
Designing moorings built of fused enlarged blocks. [Raschet konstruktsii prichalov iz naplavnykh ukrupnennykh blokov],
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Berezin, I.A., Golubeva, S.A.
Hydraulic structures, Permafrost distribution, Moorings, Prefabrication, Concrete structures, Reinforced concretes, Ice loads.

41-2789
Frost resistance of concrete with admixtures when frozen at older age. [Morozostoikost' betona s dobavkami pri zamorazhivanii v pozdnem vozraste],
IAnbykh, N.N., *Transportnoe stroitel'stvo*, Nov. 1986, No.11, p.36-37, In Russian. 4 refs.
Concrete admixtures, Frost resistance, Concrete curing, Concrete freezing, Air entrainment, Resins, Freeze thaw cycles, Tests.

41-2790
Drilling-complex BTSE-600 in hard rocky ground. [BTSE-600 v skal'nykh gruntakh],
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Karpenko, N.N.
Drills, Frozen ground, Soil freezing, Foundations, Pits (excavations).

41-2791
Engineering-geological evaluation of railroad construction areas. [Inzhenerno-geologicheskaia otsenka ralonov stroitel'stva zheleznoi dorogi],
Marakhtanov, V.P., *Transportnoe stroitel'stvo*, Dec. 1986, No.12, p.12-13, In Russian. 3 refs.
Geocryology, Spaceborne photography, Railroads, Photointerpretation, Polar regions, Surveys, Engineering geology.

41-2792
For northern construction sites. [Dlia severnykh stroek],
Malyshev, A.IA., *Transportnoe stroitel'stvo*, Dec. 1986, No.12, p.49-50, In Russian.
Motor vehicles, Houses, Prefabrication, Earth dams, Dredging, Ice crossings, Design, Construction materials, Artificial ice.

41-2793
Bridge piers without grillage under complicated natural conditions. [Bezrostverkovye opory mosta v slozhnykh prirodnykh usloviiakh],
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Gozman, A.M., Shul'man, S.A.
Bridges, Foundations, Permafrost beneath structures, Piers, Concrete piles, Railroads, Forest tundra.

41-2794
Improving thermotechnical properties of lightweight concretes for external wall panels. [Uluchshenie teplotekhnicheskikh svoistv legkikh betonov dlia naruzhnykh stenovykh panelei],
Fedorov, V.A., et al, *Transportnoe stroitel'stvo*, Feb. 1987, No.2, p.36-37, In Russian.
Makarova, N.A.
Building codes, Concrete admixtures, Lightweight concretes, Thermal properties, Thermal insulation, Air entrainment.

41-2795
Efficiency of using foam plastics as hydro-thermoinsulative materials for electrical heating plants. [Ob effektivnosti primeneniia penoplastov v kachestve teplogidroizoliatsionnykh materialov pri stroitel'stve teplovykh setei],
Valgin, V.D., et al, *Energeticheskoe stroitel'stvo*, Dec. 1986, No.12, p.17-18, In Russian. 3 refs.
Kulikov, IU.A., Pokrovskii, L.I.
Heating, Pipelines, Thermal insulation, Cellular plastics.

41-2796
Introduction of ductless pipe-laying method with solid phenol-poroplast thermal insulation. [Vnedrenie beskanal'nogo metoda prokladki teploprovodov s monolitnoi teploizoliatsiei iz fenol'nogo poroplasta],
Nesterov, V.I., et al, *Energeticheskoe stroitel'stvo*, Dec. 1986, No.12, p.18-20, In Russian.
Liublinskii, I.N., Ustinov, B.A.
Pipelines, Thermal insulation, Cellular plastics.

41-2797
Structures of foundations designed for perennially frozen strongly deformable grounds. [Effektivnye konstruktsii fundamentov na vechnomerzlykh i sil'nodeformiruemykh gruntakh],
Kogodovskii, O.A., et al, *Energeticheskoe stroitel'stvo*, Dec. 1986, No.12, p.29-32, In Russian.
Serov, A.A., Frishter, IU.I.
Prefabrication, Foundations, Plates, Reinforced concretes, Permafrost beneath structures, Frost heave, Design.

41-2798
Experimental application of rolled concrete mixtures at the construction site of the Bureya hydroelectric power plant in freezing weather. [Opytnoe primenenie ukatyvaemykh betonnykh smesei v zimnikh usloviiakh na stroitel'stve Bureiskoi GES],
Vasilevskii, V.V., et al, *Energeticheskoe stroitel'stvo*, Jan. 1987, No.1, p.8-12, In Russian.
Sudakov, V.B., Sil'nitskii, V.I.
Hydraulic structures, Concrete structures, Dams, Concrete admixtures, Winter concreting.

41-2799
Inadequate norms concerning the increase of winter earthwork costs. [O nesovershenstve norm zimnikh udorozhanii pri proizvodstve zemlianykh rabot],
Myznikov, IU.N., *Energeticheskoe stroitel'stvo*, Jan. 1987, No.1, p.41-44, In Russian. 3 refs.
Cold weather construction, Earthwork, Excavation, Moraines, Standards.

41-2800
Critical evaluation of some criteria used to infer Antarctica's glacial and climatic history from deep-sea sediments.
Anderson, J.B., *South African journal of science*, Sep. 1986, 82(9), Palaeoclimate and Evolution III, p.503-505, 30 refs.
Ice rafting, Sediments, Sea water.
An evaluation is made of some of the assumptions used in interpreting the deep-sea sedimentary record, assumptions that are not always consistent with modern glacial and oceanographic concepts. Those criteria which are most often used to interpret the deep-sea sedimentary record of the southern ocean include downcore changes in the concentration of ice-rafted debris (IRD), microfossil assemblages, oxygen and carbon isotopes, grain size parameters, and the occurrence of hiatuses in the sedimentary record. In this paper the concentration is on sedimentary parameters used for palaeoceanographic/palaeoclimatic studies: IRD content and sedimentary hiatuses. (Auth. mod.)

41-2801
Potential influence of floating ice shelves on the climate of an ice age.
Denton, G.H., et al, *South African journal of science*, Sep. 1986, 82(9), Palaeoclimate and Evolution III, p.509-513, 31 refs.
Hughes, T.J.
Ice age theory, Ice shelves, Floating ice, Climate.
It is argued that floating ice shelves were important feedback factors in producing ice-age palaeoclimates in both polar hemispheres. In the Northern Hemisphere they would have added to the effects of continental ice sheets. Antarctic ice shelves would have been the major feedback mechanism that drove ice-age climates in the Southern Hemisphere in near-synchrony with those in the Northern Hemisphere. (Auth.)

41-2802
Ice-edge eddies in the Fram Strait marginal ice zone.
Johannessen, O.M., et al, *Science*, Apr. 24, 1987, 236(4800), p.427-429, 5 refs.
Ice edge, Sea ice, Ocean currents, Fram Strait.

41-2803
Remote sensing of the Fram Strait marginal ice zone.
Shuchman, R.A., et al, *Science*, Apr. 24, 1987, 236(4800), p.429-431, 5 refs.
Ice edge, Remote sensing, Ice structure, Ocean currents, Sea ice, Fram Strait.

41-2804
Mesoscale oceanographic processes beneath the ice of Fram Strait.
Manley, T.O., et al, *Science*, Apr. 24, 1987, 236(4800), p.432-434, 10 refs.
Sea ice, Ocean currents, Subglacial observations, Fram Strait.

41-2805
Ocean dynamics and acoustic fluctuations in the Fram Strait marginal ice zone.
Dyer, I., et al, *Science*, Apr. 24, 1987, 236(4800), p.435-436, 16 refs.
Dahl, P.H., Baggeroer, A.B., Mikhlevsky, P.N.
Ice edge, Ice acoustics, Underwater acoustics, Fram Strait.

41-2806
Physical properties of sea ice discharged from Fram Strait.
Gow, A.J., et al, *Science*, Apr. 24, 1987, 236(4800), MP 2204, p.436-439, 11 refs.
Tucker, W.B.
Sea ice, Ice physics, Ice structure, Fram Strait.
It is estimated that 84 percent of the ice exiting the Arctic Basin through Fram Strait during June and July 1984 was multiyear ice and that a large percentage of this ice is ridged or otherwise deformed. While freeboard and thickness data, together with salinity measurements on cores, usually sufficed to distinguish between first and multiyear floes, preliminary identification could usually be made on the basis of snow cover measurements with snow cover being much thicker on multiyear ice. Cores from the top half meter of multiyear floes were generally very much harder and more transparent than cores from first-year floes. Age estimates of multiyear floes, based on petrographic and salinity characteristics of cores, did not exceed 4 to 5 years for any of the floes that were observed exiting Fram Strait.

41-2807
Effect of water content on the dark and radiation induced microwave conductivity of frozen gelatin gels.
Eden, J., et al, *Radiation physics and chemistry*, 1987, 29(1), p.51-56, 10 refs.
Van Lith, D., Warman, J.M., Hummel, A.
Dielectric properties, Freezing, Ice electrical properties.

41-2808
Effects of freezing on nitrite stability in aqueous solutions.
Muneta, P., et al, *Association of Official Analytical Chemists. Journal*, Jan.-Feb. 1987, 70(1), p.22-23, 6 refs.
Jasman, R., Reid, L.M.
Freezing, Solutions, Nutrient cycle, Water chemistry.

41-2809
Dynamic recrystallization and fabric development during the simple shear of ice.
Burg, J.P., et al, *Journal of structural geology*, 1986, 8(8), p.857-870, 33 refs.
Wilson, C.J.L., Mitchell, J.C.
Recrystallization, Shear properties, Ice crystals, Ice deformation.

41-2810
Freezing and interfaces: density functional theories in two and three dimensions.
Haymet, A.D.J., *Progress in solid state chemistry*, 1986, 17(1), p.1-32, 119 refs.
Freezing, Crystals, Interfaces.

41-2811
Pulse radiolysis study of electrons in frozen alkaline solutions.
Czerwik, Z., et al, *Journal of radioanalytical and nuclear chemistry, articles*, Oct. 1986, 101(2), p.275-283, 17 refs.
Wypych, M., Kroh, J.
Dielectric properties, Solutions, Freezing.

41-2812
Iceberg sightings during SIBEX-2, Chile, in Bransfield Strait, 1985. [A vistamiento de témpanos durante SIBEX-Fase II, Chile, en el estrecho Bransfield, 1985],
Schlatter, R.P., *Santiago de Chile. Instituto Antártico Chileno. Serie científica*, 1986, No.35, p.89-93, 5 refs., In Spanish with English summary.
Icebergs, Sea ice distribution, Antarctica—Bransfield Strait.
Icebergs were counted during SIBEX-2, 1985, according to instructions of the Norsk Polarinstitutt aboard the *M/N Alcazar*. A total of 196 hours of iceberg counts revealed a larger concentration on the SE part of the Bransfield Strait. These results agree with the physical oceanographic pattern of that antarctic sector; but more observations are needed to find the causes of their drift and aggregations. (Auth.)

41-2813
Formation of frozen rocks and forecasts of cryogenic processes. [Formirovanie merzlykh porod i prognoz kriogennykh protsessov],
Kaplina, T.N., ed, Moscow, Nauka, 1986, 228p., In Russian. For individual papers see 41-2814 through 41-2842. Refs. passim.
Classifications, Permafrost origin, Permafrost forecasting, Permafrost, Active layer, Periodic variations, Permafrost distribution, Permafrost structure.

41-2814
On cryogenic formations. [O kriogennykh formatsiiakh],
Kaplina, T.N., Formirovanie merzlykh porod i prognoz kriogennykh protsessov (Formation of frozen rocks and forecasts of cryogenic processes) edited by T.N. Kaplina, Moscow, Nauka, 1986, p.3-14, 28 refs., In Russian.
Classifications, Permafrost distribution, Permafrost, Permafrost origin, Seasonal freeze thaw, Active layer, Periodic variations.

41-2815
Regularities governing the salinity of frozen marine deposits. [Zakonomernosti raspredeleniia zasolennosti v merzlykh morskikh otlozheniiakh],
Dubikov, G.I., Formirovanie merzlykh porod i prognoz kriogennykh protsessov (Formation of frozen rocks and forecasts of cryogenic processes) edited by T.N. Kaplina, Moscow, Nauka, 1986, p.14-27, 14 refs., In Russian.
Clays, Saline soils, Bottom sediment, Marine deposits, Permafrost, Salinity.

41-2816
Dislocations in frozen, ice-containing, Pleistocene deposits of northern western Siberia. [Dislokatsii v merzlykh soderzhashchikh plastovye l'dy pleistotsenovykh otlozheniiakh severa Zapadnoĭ Sibiri],
Danilov, I.D., Formirovanie merzlykh porod i prognoz kriogennykh protsessov (Formation of frozen rocks and forecasts of cryogenic processes) edited by T.N. Kaplina, Moscow, Nauka, 1986, p.28-41, 15 refs., In Russian.
Dislocations (materials), Permafrost structure, Ground ice, Ice formation, Marine deposits, Permafrost origin, Soil creep, Landslides, Frost penetration.

41-2817
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Permafrost origin, Permafrost structure, Permafrost transformation, Forest tundra, Engineering geology.

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Permafrost origin, Measuring instruments, Drilling, Permafrost thickness, Wells, Permafrost transformation, Geothermy, Surveys.

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Plains, Permafrost distribution, Permafrost structure, Permafrost hydrology, Taliks, Landscape types.

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Ponomareva, O.E.
Quaternary deposits, Engineering geology, Physical properties, Salinity.

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Pavlova, O.P.
Permafrost distribution, Frost weathering, Cryogenic structures, Hydrothermal processes.

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Frost heave, Classifications, Computerized simulation, Tundra, Forest tundra, Taiga, Steppes.

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Pleistocene, Paleoclimatology, Tectonics, Sedimentation, Permafrost origin, Permafrost transformation.

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Frost heave, Frost mounds, Tectonics, Landscape types, Tundra, Forest tundra, Taiga.

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Swamps, Peat, Frost penetration, Hummocks, Radioactive age determination, Taiga, Tundra, Forest tundra.

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Artificial islands, Ice (construction material), Earth dams, Offshore drilling, Permafrost, Offshore landforms, Frozen ground (construction material).

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Ship icing, Wind velocity, Sea spray, Air temperature, Water temperature.

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Spillways, Reinforced concretes, Concrete aggregates, Cements, Concrete placing, Naleds, Ice formation.

41-2868
Organization of earthwork for quarrying, melioration, and placing cohesive ground into impervious elements of the river-bed and left-side dams of the Kureyskaya hydroelectric power plant. [Organizatsiia rabot po razrabotke kar'erov, melioratsii i ukladke sviaznykh gruntov v protivofil'tratsionnye elementy ruslovoi i levoberezhnoi plotin Kureiskoi GES].
Baliasnikov, G.G., et al, *Energeticheskoe stroitel'stvo*, Nov. 1986, No.11, p.45-49, In Russian. 3 refs.
Zal'tsman, O.M., Oparko, A.G., Pavlenko, A.A.
Earthwork, Frozen ground, Rock excavation, Concrete aggregates, Winter concreting.

41-2869
Concrete work at the Kureyskaya power plant site. [Organizatsiia betonnykh rabot na stroitel'stve Kureiskoi GES].
Bukhman, V.I., *Energeticheskoe stroitel'stvo*, Nov. 1986, No.11, p.50-54, In Russian.
Concrete structures, Reinforced concretes, Industrial buildings, Tunnels, Hydraulic structures, Foundations, Winter concreting, Concrete aggregates, Cements, Concrete admixtures.

41-2870
Sea ice operation: McMurdo Sound-Granite Harbour.
Pyne, A.R., *New Zealand antarctic record*, 1986, 7(2), p.5-13, 2 refs.
Ice cover thickness, Ice strength, Vehicles, Antarctica—McMurdo Sound, Antarctica—Granite Harbor.
The New Zealand Antarctic Research Programme (NZARP) operates a variety of vehicles on annual fast ice in McMurdo Sound. This article presents and discusses an ice thickness table for these vehicles, procedures for measurement of ice thickness and ice cracks and location of cracks, tide cracks and the transition from sea ice to coast (land or non-floating ice), as well as surface melting. (Auth.)

41-2871
Alph River ecosystem: a major freshwater environment in southern Victorialand.
Howard-Williams, C., et al, *New Zealand antarctic record*, 1986, 7(2), p.21-33, 11 refs.
Vincent, W.F., Wratt, G.S.
Glacial hydrology, Glacier melting, Limnology.
The glacier fed streams of southern Victoria Land are characterized by their emphemeral nature and extreme variability in flows even on an hour to hour basis. Most are small, with discharges less than 0.1 cu m/s and a number of them are biologically rich with dense growths of algae which proliferate during the summer melt period. This report documents the ecological characteristics of what is possibly the world's most southerly known river system which was first discovered in 1911 by the western sledging party on Scott's last expedition. Apart from a mention in the geological survey of the area in 1960 this extensive flowing water system has not been referred to since. (Auth.)

41-2872
Marine transportation of liquefied gases. [Morskaia perevozka szhizhennykh gazov].
Kozyrev, V.K., Moscow, Transport, 1986, 206p., In Russian with abridged English table of contents enclosed. 50 refs.
Liquefied gases, Tanker ships, Marine transportation.

41-2873
Scientific basis for utilization and reproduction of taiga forests in the central Ural Mountains (The Bilimbaev experimental forest taken as an example). [Nauchnye osnovy ispol'zovaniia i vosproizvodstva taezhnykh lesov Srednego Urala (na primere Bilimbaevskogo leskhoza)].
Zubareva, R.S., ed, Sverdlovsk, 1986, 158p., In Russian. For selected papers see 41-2874 through 41-2878. Refs. passim.
Mironov, B.A., ed.
Taiga, Mountain soils, Forest soils, Cryogenic soils, Forestry, Revegetation, Soil water migration, Forest canopy, Forest ecosystems.

41-2874
Characteristics of forest resources and their use in the Bilimbaev experimental and model forest. [Osobennosti lesnogo fonda i lesopol'zovaniia v Bilimbaevskom opytno-pokazatel'nom leskhoze].
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Trusov, P.F., Sofronov, B.I., Trishin, B.A.
Taiga, Forest soils, Cryogenic soils, Forestry, Revegetation, Forest ecosystems.

41-2875
Soil cover of the Bilimbaev model forest. [Pochvennyi pokrov Bilimbaevskogo leskhoza].
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Pavlova, T.S., Dedkov, V.S., Prokopovich, E.V.
Taiga, Forest soils, Mountain soils, Rock streams, Slope orientation, Soil composition, Soil profiles, Soil science.

41-2876
Hydrological role of the Bilimbaev forests. [Gidrologicheskaia rol' lesov Bilimbaevskogo leskhoza].
Mironov, B.A., Nauchnye osnovy ispol'zovaniia i vosproizvodstva taezhnykh lesov Srednego Urala (na primere Bilimbaevskogo leskhoza) (Scientific basis for utilization and reproduction of taiga forests in the Central Ural Mountains (the Bilimbaev experimental forest taken as an example)) edited by R.S. Zubareva and B.A. Mironov, Sverdlovsk, 1986, p.73-88, In Russian. 15 refs.
River basins, Protective vegetation, Snow cover distribution, Snow water equivalent, Runoff, Soil erosion, Slope orientation, Snow depth, USSR—Ural Mountains.

41-2877
Effectiveness of the gradual and selective cuttings in the Bilimbaev spruce forests. [Lesovodstvennaia effektivnost' postepennykh i vyborochnykh rubok v el'nikakh Bilimbaevskogo leskhoza].
Danilik, V.N., et al, Nauchnye osnovy ispol'zovaniia i vosproizvodstva taezhnykh lesov Srednego Urala (na primere Bilimbaevskogo leskhoza) (Scientific basis for utilization and reproduction of taiga forests in the Central Ural Mountains (the Bilimbaev experimental forest taken as an example)) edited by R.S. Zubareva and B.A. Mironov, Sverdlovsk, 1986, p.89-97, In Russian. 10 refs.
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Taiga, Forestry, Revegetation, Plant ecology, Growth.

41-2878
Present state and prospects of artificial reforestation in the Bilimbaev model forest. [Sostoianie i perspektivy razvitiia iskusstvennogo lesovosstanovleniia v Bilimbaevskom leskhoze].
Makarov, V.A., Nauchnye osnovy ispol'zovaniia i vosproizvodstva taezhnykh lesov Srednego Urala (na primere Bilimbaevskogo leskhoza) (Scientific basis for utilization and reproduction of taiga forests in the Central Ural Mountains (the Bilimbaev experimental forest taken as an example)) edited by R.S. Zubareva and B.A. Mironov, Sverdlovsk, 1986, p.98-109, In Russian. 22 refs.
Taiga, Forestry, Revegetation.

41-2879
Size dependence of natural aerosol for ice nucleation. [Zavisimost' l'doobrazuiushchikh svoistv estestvennogo aerozolia ot razmerov chastits].
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Stepanov, G.V., Khorguani, V.G.
Aerosols, Particle size distribution, Ice nuclei, Ice formation, Ice growth.

41-2880
Radiation and heat regime of some high-mountain biogeocenoses. [Osobennosti radiatsionnogo i teplovogo rezhima nekotorykh vysokogornykh biogeotsenozov].
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Microclimatology, Alpine landscapes, Soil water, Solar radiation, Radiation balance, Evaporation, Slope orientation, Heat balance, Soil temperature, Water balance, Heat transfer.

41-2881
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Beer, H.
Ice melting, Heat transfer, Ice water interface, Convection, Water flow.

41-2882
Formation and melting of a vertical ice slab in an enclosure.
Sorour, M.M., et al, *International communications in heat and mass transfer*, Mar.-Apr. 1987, 14(2), p.167-177, 14 refs.
Hassab, M.A., Madi, M.B., Kandil, F.T.
Ice melting, Heat transfer, Convection, Ice formation, Heating.

41-2883
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Icebreakers, Ice navigation, Offshore structures, Ice pressure, Models.

41-2884
Atlas of the polar regions.
U.S. National Foreign Assessment Center, Boston, Jones and Bartlett, 1985, 66p.
DLC G1054.N3
Polar regions, Exploration, Climate, Sea ice, Ice cover, Permafrost, Economic development, Environmental protection, Research projects, Maps, Transportation.
This is a hardcover edition of an atlas originally published in 1981. In addition to numerous maps, the atlas contains illustrations and descriptions covering, both in the Arctic and the Antarctic, the following areas of interest: the geopolitical issues including sovereignty problems, the Antarctic Treaty, the past and potential exploitation of marine and mineral resources, history, climate, continental and sea ice conditions, discovery and exploration, the science programs, the stations, transportation, and the environmental protection measures. Two foldouts, the Arctic reference map and the Antarctic reference map, respectively, are appended.

41-2885
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Geography, Terminology, Hydrothermal processes, Geology, Theories, Geocryology, Systems analysis, Heat transfer, Mass transfer.

41-2886
Construction of structures and foundations by the grout curtain method. [Ustroistvo sooruzhenii i fundamentov sposobom "stena v grunte"].
Smorodinov, M.I., et al, Moscow, Stroiizdat, 1986, 216p., In Russian with abridged English table of contents enclosed. 28 refs. For 1st ed. see 35-1718.
Fedorov, B.S.
Trenching, Foundations, Waterproofing, Grouting, Hydraulic structures, Supports, Walls, Concrete structures, Concretes, Soil water migration, Subsurface structures, Construction materials, Seepage, Construction equipment.

41-2887
Russian-English Arctic environment glossary.
U.S. Naval Intelligence Support Center. Foreign Languages Services Division, Mar. 1987, 219p., NISC No.8219, Second edition (revised and enlarged). Incorporates and supersedes NISC No.7906, Oct. 1985, see 41-1897.
Michaels, D., comp.
Ice, Snow, Dictionaries, Environments, Terminology, Geocryology, Polar regions.

41-2888
Yearbook of the Norwegian Polar Research Institute, 1985. [Årbok 1985].
Oslo, Norsk Polarinstitutt, Oslo, 1986, p.12-15.
Sea ice, Ice surveys, Snow surveys, Research projects, Geology, Environmental impact, Mapping, Organizations.
The report contains a description of the institute's organization, personnel, field work (in Svalbard, Mainland Norway and Antarctica) and activities of the various sections (biology, geology, geophysics, geodesy, cartography, place names, computer work, information, logistics, etc.). The institute's data bases, maps, publications and meetings are also listed. The main antarctic effort was the 1984/85 Norwegian Antarctic Research Expedition (NARE) to the Weddell Sea area, with 77 participants (28 scientists). The program included establishment of 2 summer stations on Queen Maud Land, ornithological observation, topographic work by satellite and triangulation, glaciological, geological and biological sampling, magnetic profiling and other studies. A more detailed account of the expedition was published in NARE Report No.22, 1985 (see 15D-32617).

41-2889
Engineering geology in construction. [Inzhenernaia geologiia v stroitel'stve].
Ziangirov, R.S., et al, Moscow, Stroiizdat, 1986, 175p., In Russian with abridged English table of contents enclosed. 32 refs.
Bykova, V.S., Poltev, M.P.
Rock streams, Permafrost distribution, Landslides, Permafrost physics, Avalanches, Saline soils, Plains, Permafrost hydrology, Loess, Thermokarst, Settlement (structural), Charts.

41-2890
Construction of electric power lines for main pipelines. Manual. [Sooruzhenie LEP dlia magistral'nykh truboprovodov. Spravochnoe posobie].
Arnopolin, A.G., et al, Moscow, Nedra, 1986, 164p. (Pertinent p.127-138), In Russian with abridged English table of contents enclosed. 11 refs.
Michkov, V.I.
Transmission lines, Power line supports, Permafrost beneath structures, Electrical grounding, Swamps, Deserts, Permafrost physics, Manuals.

41-2891
Evidence for two intervals of enhanced Be-10 deposition in antarctic ice during the last glacial period.
Raisbeck, G.M., et al, *Nature*, Mar. 19-25, 1987, 326(6110), p.273-277, 23 refs.
Oxygen isotopes, Ice composition, Paleoclimatology, Ice cores, Ice dating, Glaciation, Antarctica—Vostok Station, Antarctica—Dome C.
This is a follow-up study of previously reported concentration profiles of cosmic ray produced (cosmogenic) Be-10 in deep ice cores from Dome C and Vostok Station. In both these cores, a concentration of Be-10 was found approximately 2 times larger in ice from the late glacial period than in the Holocene ice. This was interpreted as probably resulting from a lower precipitation rate on the antarctic plateau during glacial periods, compared to interglacial periods. In the Vostok profile there was one sample, corresponding to about 60,000 yr BP, which gave an unusually large Be-10 concentration, not correlated with any obvious climatic event. It is suggested that this sample might be reflecting increased Be-10 production, as for example during a period of reduced solar modulation. A much more detailed concentration profile for Be-10 was measured in the present study in the Vostok core. The results confirm a Be-10 "peak", lasting about 1,000-2,000 years at about 60,000 yr BP, and show another similar peak at about 35,000 yr BP. The latter peak was also observed in the Dome C core. Possible sources for these peaks, and their potential as stratigraphic markers, are discussed. (Auth. mod.)

41-2892
Performance of diesel engine bearings at low temperature. [Tieftemperaturverhalten von Dieselmotoren-Lagerungen].
Grobuschek, F., *Motortechnische Zeitschrift*, Nov. 1986, 47(11), p.477-486, In German with English summary. 26 refs.
Diesel engines, Cold weather performance.

41-2893
Ground freezing techniques.
Harris, J., *Civil engineering*, Nov.-Dec. 1986, p.11-12, 51, 4 refs.
Soil freezing, Artificial freezing.

41-2894
Road design, allowing for climatic impact on traffic conditions. [Proektirovanie dorog s uchetom vliianiia klimata na usloviia dvizheniia].
Vasil'ev, A.P., Moscow, Transport, 1986, 248p., In Russian with abridged English table of contents enclosed. 66 refs.
Roads, Subgrade maintenance, Winter maintenance, Snowdrifts, Ice control, Pavements.

41-2895
Ice formation in hardened cement paste, Pt.3. Slow resaturation of room temperature cured pastes.
Bager, D.H., et al, *Cement and concrete research*, Jan. 1987, 17(1), p.1-11, 6 refs.
Sellevold, E.J.
Concrete freezing, Concrete curing, Ice formation.

41-2896
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Yakowitz, S., et al, *Journal of computational physics*, Sep. 1986, 66(1), p.132-150, 33 refs.
Hutter, K., Szidarovszky, F.
Ice sheets, Glacier flow, Mathematical models.

41-2897
Freeze-thaw durability of concrete with and without silica fume in ASTM C 666 (procedure A) test method: internal cracking versus scaling.
Pigeon, M., et al, *Cement, concrete, and aggregates*, Winter 1986, 8(2), p.76-85, 11 refs.
Pleau, R., Aitcin, P.-C.
Concrete freezing, Frost resistance, Cracking (fracturing), Freeze thaw tests.

41-2898
Interrelationships among components of biogeocenoses in southern taiga. [Vzaimootnosheniia komponentov biogeotsenozov v iuzhnoi taige].
Smirnov, A.V., ed, Kalinin, 1986, 120p., In Russian. For selected papers see 41-2899 and 41-2900. Refs. passim.
Taiga, Trees (plants), Plant ecology, Plant physiology, Frost resistance, Paludification, Forest fires, Peat, Microrelief, Ecosystems, Human factors.

41-2899
Role of forest fires and other ecologic factors in the formation of southern taiga swamps. [Rol' pozharov i drugikh ekologicheskikh faktorov v obrazovanii bolot iuzhnoi taigi].
Liakhova, I.G., Vzaimootnosheniia komponentov biogeotsenozov v iuzhnoi taige (Interrelationships among components of biogeocenoses in southern taiga) edited by A.V. Smirnov, Kalinin, 1986, p.75-80, In Russian. 3 refs.
Taiga, Forest fires, Swamps, Peat, Plant ecology, Ecosystems, Microrelief, Human factors.

41-2900
Moisture deficiency in some trees during fall-winter seasons. [Vodnyi defitsit v osenne-zimnii period u nekotorykh drevesnykh porod].
Nevskii, L.M., Vzaimootnosheniia komponentov biogeotsenozov v iuzhnoi taige (Interrelationships among components of biogeocenoses in southern taiga) edited by A.V. Smirnov, Kalinin, 1986, p.97-100, In Russian. 5 refs.
Taiga, Plant ecology, Plant physiology, Frost resistance, Trees (plants).

41-2901
Morphology and lithogenesis of rock streams. [Kurumovyi morfolitogenez].
Govorushko, S.M., Vladivostok, 1986, 120p., In Russian with abridged English table of contents enclosed. Refs. p.106-119.
Slope processes, Rock streams, Ice rafting, Water transport, Microrelief, Hydraulic structures, Mining.

41-2902
Hydrothermal regime of soils in pine forests of Karelia. [Gidrotermicheskiĭ rezhim pochv sosnovykh lesov Karelii],
Erukov, G.V., et al, Leningrad, Nauka, 1986, 112p., In Russian with English table of contents enclosed. Refs. p.103-109.
Vlaskova, G.V.
Taiga, Soil formation, Soil water migration, Soil temperature, Thermal regime, Plant ecology, Plant physiology, Ecosystems, Paludification.

41-2903
Blasting work in ground and rocks. [Vzryvnye raboty v gruntakh i skal'nykh porodakh],
Kucheriavyĭ, F.I., ed, Kiev, Naukova dumka, 1986, 128p., In Russian. For selected papers see 41-2904 through 41-2907. Refs. passim.
Placer mining, Permafrost physics, Quarries, Excavation, Blasting, Land reclamation, Peat, Swamps, Channels (waterways), Frozen ground, Explosion effects.

41-2904
Using the blow-out method in open mining of placer deposits. [Primenenie vzryvov na sbros pri otkrytoĭ razrabotke rossypeĭ],
Poplavskiĭ, V.A., Vzryvnye raboty v gruntakh i skal'nykh porodakh (Blasting work in ground and rocks) edited by F.I. Kucheriavyĭ, Kiev, Naukova dumka, 1986, p.48-54, In Russian. 6 refs.
Placer mining, Permafrost, Quarries, Excavation, Blasting.

41-2905
Peat excavation by blasting in channel construction. [Tekhnologiia stroitel'stva kanalov v torfianykh gruntakh vzryvnym sposobom],
Frash, G.B., Vzryvnye raboty v gruntakh i skal'nykh porodakh (Blasting work in ground and rocks) edited by F.I. Kucheriavyĭ, Kiev, Naukova dumka, 1986, p.54-61, In Russian. 6 refs.
Land reclamation, Swamps, Organic soils, Peat, Channels (waterways), Blasting, Excavation.

41-2906
On the least resistance line of curvilinear blow-out charges detonated in permafrost. [O linii naimen'shego soprotivleniia pri vzryve krivolineĭnogo zariada na vybros v merzlom grunte],
Afanas'ev, E.M., et al, Vzryvnye raboty v gruntakh i skal'nykh porodakh (Blasting work in ground and rocks) edited by F.I. Kucheriavyĭ, Kiev, Naukova Dumka, 1986, p.61-66, In Russian. 5 refs.
Fedotov, A.P., Gundarev, K.A.
Frozen rock strength, Seasonal freeze thaw, Blasting, Explosion effects, Analysis (mathematics).

41-2907
Effectiveness of breaking perennially frozen sands by bore-hole charges of lesser diameter in underground excavation of placer deposits. [Effektivnost' otboĭki mnogoletnemerzlykh peskov skvazhinnymi zariadami umen'shennogo diametra pri podzemnoĭ razrabotke rossypnykh mestorozhdeniĭ],
Shchegolev, S.V., Vzryvnye raboty v gruntakh i skal'nykh porodakh (Blasting work in ground and rocks) edited by F.I. Kucheriavyĭ, Kiev, Naukova dumka, 1986, p.81-85, In Russian. 5 refs.
Placer mining, Sands, Permafrost physics, Blasting.

41-2908
Studies and calculations in structural design and building technology of hydraulic transport structures. [Issledovaniia i raschety po konstruktsiiam i tekhnologii vozvedeniia transportnykh gidrotekhnicheskikh sooruzheniĭ],
Shkol'nikov, I.E., ed, Moscow, Transport, 1986, 96p., In Russian. For selected papers see 41-2909 and 41-2910. Refs. passim.
Hydraulic structures, Moorings, Piers, Concrete structures, Winter concreting.

41-2909
Calculating vertical shift of narrow, filled-up piers, allowing for ice-bearing cores. [Raschet uzkikh zasypnykh pirsov na sdvig v vertikal'noĭ ploskosti s uchetom ledogruntovogo iadra],
Sokolov, A.V., Issledovaniia i raschety po konstruktsiiam i tekhnologii vozvedeniia transportnykh gidrotekhnicheskikh sooruzheniĭ (Studies and calculations in structural design and building technology of hydraulic transport structures) edited by I.E. Shkol'nikov, Moscow, Transport, 1986, p.34-42, In Russian. 2 refs.
Moorings, Piers, Stresses, Shear strain, Design.

41-2910
Improvement of technology and quality control of concreting moorings in the northeastern Ob'-Irtysh Basin. [Sovershenstvovanie tekhnologii i kontrol' kachestva betonnykh rabot pri stroitel'stve prichalov na severe Ob'-Irtyshskogo basseĭna],
Poliakov, B.I., et al, Issledovaniia i raschety po konstruktsiiam i tekhnologii vozvedeniia transportnykh gidrotekhnicheskikh sooruzheniĭ (Studies and calculations in structural design and building technology of hydraulic transport structures) edited by I.E. Shkol'nikov, Moscow, Transport, 1986, p.59-68, In Russian. 4 refs.
Berezin, I.A., Goncharov, V.V.
Moorings, Winter concreting, Hydraulic structures, Concrete aggregates, Concrete freezing, Reinforced concretes.

41-2911
Design and erection of foundations in the close vicinity of existing structures. Construction experience in the northwestern USSR. [Proektirovanie i vozvedenie fundamentov vblizi sushchestvuiushchikh sooruzheniĭ. Opyt stroitel'stva v usloviiakh Severo-Zapada SSSR],
Sotnikov, S.N., et al, Moscow, Strolizdat, 1986, 95p., In Russian with English summary and table of contents. 37 refs.
Simagin, V.G., Vershinin, V.P.
Buildings, Foundations, Piles, Settlement (structural), Fines, Thixotropy, Frost heave, Organic soils, Peat, Moraines.

41-2912
Humus formation in ecosystems affected by industrial activities. [Gumusoobrazovanie v tekhnogennykh ekosistemakh],
Kovalev, R.V., ed, Novosibirsk, Nauka, 1986, 165p., In Russian with English table of contents enclosed. Refs. p.157-164.
Human factors, Soil microbiology, Permafrost distribution, Permafrost depth, Soil composition, Active layer, Soil chemistry, Soil erosion, Soil formation, Revegetation, Plains, Cryogenic soils, Mountain soils, USSR—Kuznetsk Basin.

41-2913
Dredge-excavation of ground. [Gidromekhanizatsiia razrabotki gruntov],
Ogorodnikov, S.P., Moscow, Strolizdat, 1986, 256p., In Russian with abridged English table of contents enclosed. 73 refs.
Dredging, Trenching, Machinery, Equipment, Cold weather operation, Cold weather performance, Construction equipment, Transportation, Hydraulic structures, Earth dams, Pipe laying, Channels, Roadbeds, Foundations.

41-2914
Improving the efficiency of petroleum transportation by river. [Povyshenie effektivnosti rechnykh nefteperevozok],
Zhivotkevich, N.I., ed, Moscow, Transport, 1986, 96p., In Russian. For selected paper see 41-2915.
Ice navigation, River ice, Petroleum transportation.

41-2915
Transportation of petroleum products during the extended and winter navigation seasons. [Perevozki neftegruzov v prodlennyĭ i zimniĭ periody navigatsiĭ],
Levanov, B.I., Povyshenie effektivnosti rechnykh nefteperevozok (Improving the efficiency of petroleum transportation by river) edited by N.I. Zhivotkevich, Moscow, Transport, 1986, p.61-66, In Russian.
Ice navigation, River ice, Petroleum transportation.

41-2916
Heating, ventilation and thermal insulation systems of railroad buildings and structures. [Sistemy otopleniia, ventiliatsii i teplozashchity zdaniĭ i sooruzheniĭ zheleznodorozhnogo transporta],
Listov, A.M., ed, Moscow, Transport, 1986, 81p., In Russian. For selected papers see 41-2917 through 41-2920. Refs. passim.
Railroads, Industrial buildings, Transition heating, Urban planning, Residential buildings, Tundra, Forest tundra, Microclimatology, Environmental protection, Permafrost beneath structures.

41-2917
Double air and hot-air curtains in entrances to industrial buildings. [Dvoĭnye vozdushnye i vozdushno-teplovye zavesy v vorotakh proizvodstvennykh zdaniĭ],
Ievlev, M.V., Sistemy otopleniia, ventiliatsii i teplozashchity zdaniĭ i sooruzheniĭ zheleznodorozhnogo transporta (Heating, ventilation and thermal insulation systems of railroad buildings and structures) edited by A.M. Listov, Moscow, Transport, 1986, p.26-32, In Russian. 3 refs.
Transition heating, Industrial buildings, Heating, Heat loss.

41-2918
Fundamentals of the evaluation of environmental and climatic conditions for planning construction workers' settlements at new railroad construction sites of northern West Siberia. [Metodicheskie osnovy otsenki prirodno-klimaticheskikh usloviĭ pri proektirovanii poselkov transportnykh stroiteleĭ na zheleznodorozhnykh novostroĭkakh severa Zapadnoĭ Sibiri],
Sobchenko, M.S., et al, Sistemy otopleniia, ventiliatsii i teplozashchity zdaniĭ i sooruzheniĭ zheleznodorozhnogo transporta (Heating, ventilation and thermal insulation systems of railroad buildings and structures) edited by A.M. Listov, Moscow, Transport, 1986, p.36-41, In Russian. 6 refs.
Kurakina, N.K., Klimova, G.K.
Site surveys, Urban planning, Microclimatology, Environmental protection, Permafrost beneath structures, Buildings, Permafrost distribution, Winter maintenance, Wind factors, Tundra, Forest tundra, Construction.

41-2919
Requirements for thermotechnical properties of lightweight concretes for one-layer enclosures for the North. [Trebovaniia k teplotekhnicheskim svoĭstvam legkikh betonov odnosloĭnykh ograzhdaiushchikh konstruktsiĭ dlia raĭonov Severa],
Makarova, N.A., et al, Sistemy otopleniia, ventiliatsii i teplozashchity zdaniĭ i sooruzheniĭ zheleznodorozhnogo transporta (Heating, ventilation and thermal insulation systems of railroad buildings and structures) edited by A.M. Listov, Moscow, Transport, 1986, p.42-53, In Russian. 3 refs.
Fedorov, V.A., Demin, A.I., Aksenova, E.Sh.-R.
Concrete structures, Prefabrication, Panels, Residential buildings, Walls, Industrial buildings, Municipal engineering, Lightweight concretes, Permafrost beneath structures.

41-2920
Improving thermal insulation of building walls. [Povyshenie teplozashchitnykh kachestv ograzhdaiushchikh konstruktsiĭ zdaniĭ],
Mordukhovich, I.M., et al, Sistemy otopleniia, ventiliatsii i teplozashchity zdaniĭ i sooruzheniĭ zheleznodorozhnogo transporta (Heating, ventilation and thermal insulation systems of railroad buildings and structures) edited by A.M. Listov, Moscow, Transport, 1986, p.53-60, In Russian.
Skavronskaia, A.B.
Buildings, Permafrost beneath structures, Walls, Thermal insulation.

41-2921
Availability of mineral resources in the Antarctic. [Verfügbarkeit mineralischcher Ressourcen in der Antarktis],
Roland, N.W., *Geowissenschaften in unserer Zeit*, Sep. 1986, 4(5), p.154-163, In German. 18 refs.
Natural resources, Minerals, Economic development, Antarctica.
A few of the extreme characteristics of Antarctica are listed: most isolated, least accessible, coldest, windiest, driest of all continents. Theoretical considerations for mineral deposits are mentioned including a relationship to the Gondwana concept. A more detailed treatment is given of individual deposits such as tin, iron, copper, molybdenum, coal and oil, with indication of general locations and estimates of percentages of deposits. Problems of exploration and finding these minerals are discussed in terms of accessibility; existing knowledge of the occurrence of raw minerals; limitations of prospecting methods; and abundance of deposits. The paper closes with a discussion of the problems associated with mining these materials, taking into account the high costs of the various facets of mining operations; market economy; and technical, political, and ecological factors.

41-2922
Qualities of high-strength lightweight concrete used for construction of Arctic offshore platform.
Tachibana, D., et al, *Shimizu technical research bulletin*, Mar. 1987, No.6, p.7-15, 11 refs.
Imai, M., Okada, T.
Offshore structures, Lightweight concretes, Frost resistance.

41-2923
Proceedings.
Symposium on Unbound Aggregates in Roads, Apr. 7-8, 1981, Nottingham, England, University, Dept. of Civil Engineering, [1981], 207p., Refs. passim. For selected papers see 41-2924 through 41-2928.
Jones, R.H., ed.
Roads, Pavements, Soil aggregates, Subgrade soils, Frost heave, Frost resistance, Particle size distribution, Meetings, Tests, Construction materials.

41-2924
Acceptance testing for granular materials—a materials engineers viewpoint.
Hill, J., Symposium on Unbound Aggregates in Roads, Apr. 7-8, 1981. Proceedings. Edited by R.H. Jones, Nottingham, England, University, Dept. of Civil Engineering, [1981], p.33-38.
Roads, Soil aggregates, Construction materials, Pavements, Frost heave, Bearing strength, Compaction, Tests, Grain size.

41-2925
Frost susceptibility tests and their application.
Jones, R.H., Symposium on Unbound Aggregates in Roads, Apr. 7-8, 1981. Proceedings. Edited by R.H. Jones, Nottingham, England, University, Dept. of Civil Engineering, [1981], p.45-50, 19 refs.
Roads, Frost resistance, Frost heave, Thaw weakening, Concrete freezing, Cold chambers, Tests.

41-2926
Grading and frost heave.
Hughes, R., Symposium on Unbound Aggregates in Roads, Apr. 7-8, 1981. Proceedings. Edited by R.H. Jones, Nottingham, England, University, Dept. of Civil Engineering, [1981], p.51-56, 21 refs.
Subgrade soils, Frost heave, Particle size distribution, Frost resistance, Soil aggregates, Roads, Grain size, Tests, Compaction.

41-2927
Frost heave compliance testing in Scotland.
Fairley, H.G., Symposium on Unbound Aggregates in Roads, Apr. 7-8, 1981. Proceedings. Edited by R.H. Jones, Nottingham, England, University, Dept. of Civil Engineering, [1981], p.57-62, 5 refs.
Frost heave, Subgrades, Construction materials, Frost resistance, Roads, Tests, Cold chambers, Temperature effects.

41-2928
Research at TRRL on the frost-susceptibility of road-making materials.
Sherwood, P.T., Symposium on Unbound Aggregates in Roads, Apr. 7-8, 1981. Proceedings. Edited by R.H. Jones, Nottingham, England, University, Dept. of Civil Engineering, [1981], p.151-160.
Construction materials, Roads, Frost heave, Frost resistance, Soil aggregates, Compaction, Tests, Cold chambers, Frost penetration.

41-2929
Advances in ice mechanics—1987.
International Symposium and Exhibit on Offshore Mechanics and Arctic Engineering, 6th, Houston, TX, Mar. 1-6, 1987, MP 2207, New York, American Society of Mechanical Engineers, 1987, 49p., Refs. passim. For individual papers see 41-2930 through 41-2933.
Chung, J.S., ed, Sodhi, D.S., ed.
Ice mechanics, Ice loads, Offshore structures, Ice strength, Meetings, Ice physics, Rheology, Ice solid interface, Drift, Sea ice.

41-2930
Advances in ice mechanics in the United Kingdom.
Hallam, S.D., et al, International Symposium and Exhibit on Offshore Mechanics and Arctic Engineering, 6th, Houston, TX, Mar. 1-6, 1987. [Proceedings.] Advances in ice mechanics—1987. Edited by J.S. Chung, D.S. Sodhi, New York, American Society of Mechanical Engineers, 1987, p.1-5, 56 refs.
Sanderson, T.J.O.
Ice mechanics, Ice loads, Offshore structures, Ice strength, Ice cracks, Experimentation, Ice physics, Ice structure, Engineering, Rheology, United Kingdom.

41-2931
Advance in ice mechanics in Finland.
Maattanen, M., International Symposium and Exhibit on Offshore Mechanics and Arctic Engineering, 6th, Houston, TX, Mar. 1-6, 1987. [Proceedings.] Advances in ice mechanics—1987. Edited by J.S. Chung, D.S. Sodhi, New York, American Society of Mechanical Engineers, 1987, p.7-14, 48 refs.
Ice mechanics, Ice navigation, Offshore structures, Icebreakers, Ice pressure, Ice models, Ice loads, Ice forecasting, Pressure ridges, Finland.

41-2932
Recent advances in ice mechanics in Canada.
Sinha, N.K., et al, International Symposium and Exhibit on Offshore Mechanics and Arctic Engineering, 6th, Houston, TX, Mar. 1-6, 1987. [Proceedings.] Advances in ice mechanics—1987. Edited by J.S. Chung, D.S. Sodhi, New York, American Society of Mechanical Engineers, 1987, p.15-35, Refs. p.29-35.
Timco, G.W., Frederking, R.
Ice mechanics, Sea ice, Ice strength, Ice loads, Offshore structures, Compressive properties, Ice deformation, Rheology, Ice elasticity, Ice creep, Models, Canada.

41-2933
Advances in sea ice mechanics in the USA.
Sodhi, D.S., et al, MP 2208, International Symposium and Exhibit on Offshore Mechanics and Arctic Engineering, 6th, Houston, TX, Mar. 1-6, 1987. [Proceedings.] Advances in ice mechanics—1987. Edited by J.S. Chung, D.S. Sodhi, New York, American Society of Mechanical Engineers, 1987, p.37-49, 105 refs.
Cox, G.F.N.
Ice mechanics, Ice strength, Sea ice, Ice loads, Offshore structures, Ice physics, Ice solid interface, Drift, Compressive properties, Models, Petroleum industry.
A brief review of significant advances in the field of sea ice mechanics in the United States is presented in this paper. Emphasis is on ice forces on structures, as the subject relates to development of oil and gas resources in the southern Beaufort Sea. The main topics discussed here are mechanical properties, ice-structure interaction, modeling of sea ice drift, and oil industry research activities. Significant advances in the determination of ice properties are the development of testing procedures to obtain consistent results. Using stiff testing machines, researchers have been able to identify the dependence of tensile and compressive strengths on different parameters, e.g., strain rate, temperature, grain size, c-axis orientation, porosity, and state of stress (uniaxial or multiaxial). Now reliable data exist on the tensile and compressive strengths of first-year and multi-year sea ice.

41-2934
Winter air temperatures in relation to frost damage in roads.
Sherwood, P.T., et al, *Transport and Road Research Laboratory. Research report*, 1986, No.45, 15p., 10 refs.
Roe, P.G.
Frost heave, Roads, Frost shattering, Frost penetration, Damage, Foundations, Air temperature, Meteorological factors.

41-2935
Hydraulics of river ice.
Shen, H.T., *Clarkson University, Potsdam, NY. Department of Civil and Environmental Engineering. Report*, Aug. 1985, No.85-1, 78p., 87 refs.
River ice, Ice cover effect, Hydraulics, Heat transfer, Ice formation, Navigation, Electric power, Water supply, Analyiss (mathematics), Meteorological factors, Snowfall.

41-2936
Drilling and slotting of ice and permafrost with rotating high pressure water jets.
Vijay, M.M., et al, International Symposium on Jet Cutting Technology, 8th, Durham, England, Sep. 9-11, 1986. Proceedings, Cranfield, England, BHRA, The Fluid Engineering Centre, 1986, p.177-187, 18 refs.
Gratian-Bellew, P.E., Sinha, N.K.
Ice cutting, Hydraulic jets, Permafrost, Ice drills, Scanning electron microscopy, Rotary drilling, High pressure tests.

41-2937
The Arctic, autumn '83. *Soviet shipping*, Jan.-Mar. 1984, No.1, p.32-35.
Icebreakers, Ice navigation, Tanker ships, Arctic Ocean.

41-2938
Quarter of a century on ice watch.
Leviakov, M., *Soviet shipping*, Jan.-Mar. 1985, No.1, p.20-21.
Ice navigation, Icebreakers, Nuclear power.

41-2939
Nuclear icebreaker *Rossiia*. *Soviet shipping*, Apr.-June 1985, No.2, p.25-27.
Icebreakers, Nuclear power, Design.

41-2940
Protection of the concrete of hydraulic structures from the effects of temperature and moisture.
Davidenko, V.M., et al, *Hydrotechnical construction*, June 1986 (Pub. Dec. 86), 20(6), p.293-299, Translated from Gidrotekhnicheskoe stroitel'stvo. 10 refs.
Davidenko, G.A., Kargin, G.M.
Frost resistance, Hydraulic structures, Concrete structures, Frost protection, Construction materials, Reinforced concretes.

41-2941
Radiofrequency thermal emission of melting ice cover as an indicator of the ice state—case of Lake Sevan.
Kondrat'ev, K.IA., et al, *Akademiia nauk SSSR. Doklady. Earth science sections*, Oct. 1986, 280(1-6), p.21-23, For Russian original see 39-2730. 6 refs.
Vlasov, V.P., Melent'ev, V.V.
Icebound lakes, Lake ice, Ice melting, Ice physics, Ice cover thickness, Polynyas, Infrared radiation, Spaceborne photography, Infrared reconnaissance.

41-2942
Resilient modulus of freeze-thaw effected granular soils for pavement design and evaluation. Part 3. Laboratory tests on soils from Albany County Airport.
Cole, D.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Feb. 1987, CR 87-02, 36p., ADA-179 253, 6 refs.
Bentley, D.L., Durell, G.D., Johnson, T.C.
Pavements, Freeze thaw tests, Subgrade soils, Airports, Roads, Unfrozen water content, Soil water, Temperature effects.
This is the third in a series of four reports on the laboratory and field testing of a number of road and airfield subgrades, covering the laboratory repeated-load triaxial testing of five soils in the frozen and thawed states and analysis of the resulting resilient modulus measurements. The laboratory testing procedures allow simulation of the gradual increase in stiffness found in frost-susceptible soils after thawing. The resilient modulus is expressed in a nonlinear model in terms of the applied stresses, the soil moisture tension level (for unfrozen soil), the unfrozen water content (for frozen soil) and the dry density. The resilient modulus is about 10 GPa for the frozen material at temperatures in the range of -5 to -8 C. The decrease in modulus with increasing temperature was well-modeled in terms of the unfrozen water content. Upon thaw, the modulus dropped to about 100 MPa and generally increased with increasing confining stress and decreased with increasing principal stress ratio. The modulus also increased with the soil moisture tension level. The resilient Poisson's ratio did not appear to be a systematic function of any of the test variables.

41-2943
Determination of surface temperature of anti-iced axial compressor inlet guide vane.
Osipov, V.N., *Soviet aeronautics*, 1985, 28(3), p.56-60, Translated from Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Aviatsionnaia tekhnika. 4 refs.
Jet engines, Aircraft icing, Compressors, Pumps, Ice control, Engines.

41-2944
Calculational method for determination of carburetor icing rate.
Nazarov, V.I., et al, *Chemistry and technology of fuels and oils*, Sep.-Oct. 1985, 21(9-10), p.544-546, Translated from Khimiia i tekhnologiia topliv i masel. 3 refs.
Zaslavskiĭ, A.A., Emel'ianov, V.E., Gonopol'skaia, A.F.
Icing rate, Motor vehicles, Carburators, Chemical ice prevention, Admixtures, Fuels, Cold weather operation.

41-2945
More precise definition of computed permafrost temperatures in beds of buildings and structures.
Fedorovich, D.I., et al, *Soil mechanics and foundation engineering*, Sep.-Oct. 1985 (Pub. Mar. 86), 22(5), p.188-192, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 9 refs.
Gokhman, M.R.
Foundations, Permafrost beneath structures, Soil temperature, Buildings.

41-2946
Failure of frozen soils by high-pressure hydraulic jets in trench and pit construction.
Petrosian, L.R., et al, *Soil mechanics and foundation engineering*, Sep.-Oct. 1985 (Pub. Mar. 86), 22(5), p.194-197, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 9 refs.
Mosin, V.D.
Foundations, Pits (excavations), Trenching, Hydraulic jets, Permafrost beneath structures.

41-2947

Climatic warming and basal melting of large ice sheets: possible complications for East Antarctica.

Saari, M.R., et al, *Geophysical research letters*, Jan 1987, 14(1), p.33-36, 23 refs.

Yuen, D.A., Schubert, G.

Climatic changes, Ice sheets, Ice melting, Antarctica—East Antarctica.

Climatic warming is shown to be capable of inducing shear heating instability and basal melting in a model ice sheet that is creeping slowly downslope. Growth times of the instability are calculated from a nonlinear analysis of temperature and flow in the model ice sheet whose surface undergoes a prescribed increase of temperature. The source of instability lies in the decrease of maximum ice thickness for steady downslope creep with increasing surface temperature. A surface temperature increase of 5 to 10 K can cause instability on a 10,000 year time scale for realistic ice rheology. The instability occurs suddenly after a prolonged period of dormancy. The instability might be relevant to the East Antarctic ice sheet. Warming associated with the Holocene interglacial epoch that heralded the end of the last ice age may have set the East Antarctic ice sheet on a course toward widespread instability some 10,000 years later. The present CO2-induced climate warming is also a potential trigger for instability and basal melting of the East Antarctic ice sheet. (Auth.)

41-2948

Reflection experiment on a floating ice platform.

Hajnal, Z., et al, *Geophysical journal*, Apr. 1987, 89(1), p.201-208, 6 refs.

Overton, A.

Seismic surveys, Floating ice, Marine geology.

41-2949

Modern sediments of the Terra Nova Bay polynya, Ross Sea, Antarctica.

Hughes, P., et al, *Antarctic journal of the United States*, 1985, 20(5), p.107-108, 6 refs.

Krissek, L.A.

Sediments, Polynyas, Wind (meteorology), Antarctica—Terra Nova Bay.

The primary process that makes the area of the Terra Nova Bay polynya different from adjacent ice-covered areas is wind blown materials from exposed rocks on the shore. Katabatic winds blow steadily at 30k here, with much greater velocities during storms. The same winds blow icebergs quickly out to sea, accounting for the decreased deposition of glacially transported materials. Other sediment components are similar to those found in ice-covered areas.

41-2950

Vertical sediment flux beneath annual sea ice, McMurdo Sound, Antarctica.

Dunbar, R.B., et al, *Antarctic journal of the United States*, 1985, 20(5), p.109-111, 13 refs.

Leventer, A.R., Marty, R.C.

Sea ice, Sediment transport, Equipment, Antarctica—McMurdo Sound.

A variety of sources and transport pathways supplies sediments to the region: land generated material is transported by ice rafting and by icebergs, while biogenetic material accumulates rapidly, borne by the water currents in the Sound. Forty-five sediment traps were deployed at 14 sites in the Sound and hauled out for examination at two-week intervals. Locations of the traps and sample results are presented.

41-2951

Ross Sea oceanography, 1985.

Pillsbury, R.D., et al, *Antarctic journal of the United States*, 1985, 20(5), p.112-113, 5 refs.

Jacobs, S.S.

Sea ice, Ice water interface, Hydrography, Antarctica—Ross Sea.

Field studies of ocean/ice interactions continued on two cruises on *Polar Star* from the end of Jan. to the first week in Feb. 1985. Lines of XBTs were cast between McMurdo Station and Terra Nova Bay and between MCM and Mooring 1 near the eastern end of Ross Ice Shelf. Readings were taken at 30 minute intervals and the Ross Ice Shelf barrier position was logged every 15 minutes. Reduction, analysis and reporting of the data is underway at Oregon State U. and Lamont-Doherty Geological Lab.

41-2952

Oceanic inclusions in the J-9 sea-ice core.

Zotikov, I.A., et al, *Antarctic journal of the United States*, 1985, 20(5), p.113-115, 14 refs.

Jacobs, S.S.

Sea ice, Ice cores, Subglacial observations, Antarctica—Ross Ice Shelf.

Oceanic inclusions in a 416 m core from the Ross Ice Shelf were observed in the bottom 6 m of the core. A preliminary analysis shows some extinct diatom species as well as species that exist today but are rare south of 60°S. A third group consists of what may be cysts of a dinoflagellate. Ross Ice Shelf at J9 has travelled about 200 km from its grounding line over a period of 600 years, a rate of about 300 m/a.

41-2953

Salinity, alkalinity, and calcium of the Weddell Sea ice.

Chen, C.-T.A., *Antarctic journal of the United States*, 1985, 20(5), p.117-119, 16 refs.

Sea ice, Ice salinity, Antarctica—Weddell Sea.

Broken chunks of ice were collected from the Weddell Sea in the austral spring, 1981, and analyzed. Conductivity salinities and densities were measured by an Autosal and a Sodes densimeter, salinities were calculated from densities and a seawater equation of state. Alkalinity measurements at low salinity values are suspect because the methodology for the measurements has not yet been fully developed. Results of the analysis are tabulated.

41-2954

Wilkes Land Expedition 1985: biological observations in the ice-edge zone.

Garrison, D.L., et al, *Antarctic journal of the United States*, 1985, 20(5), p.123-124, 3 refs.

Van Scoy, K.

Ice edge, Algae, Ice sampling, Antarctica—Wilkes Land.

This study of features of the ice-edge zone along the Wilkes Land Coast was made as part of the Wilkes Land Expedition, 1985. Algal biomass in ice and water was estimated by measuring chlorophyll *a*. Samples from throughout the upper water column were collected using water-sampling bottles. In ice floes, samples were taken with an ice coring auger. Several samples of broken ice floes, surface slush, and brash ice were collected by bucket. Samples were preserved for chlorophyll *a*, pigmentation, nutrient, and microbial population studies. Results of analyses are presented.

41-2955

Ice nucleation activity of antarctic marine microorganisms.

Parker, L.V., et al, *Antarctic journal of the United States*, 1985, 20(5), MP 2217, p.126-128, 12 refs.

Sullivan, C.W., Forest, T.W., Ackley, S.F.

Sea ice, Algae, Nucleating agents.

A brief review of recent research leads to the conclusion that scavenging is the mechanism by which microorganisms are incorporated in sea ice. Initial studies are presented of the relative ability of melted sea ice and pure cultures of ice algae and ice bacteria to nucleate water droplets. Details of this process are expounded.

41-2956

Ecology of sea-ice microbial communities during the 1984 winter-to-summer transition in McMurdo Sound, Antarctica.

Kottmeier, S.T., et al, *Antarctic journal of the United States*, 1985, 20(5), p.128-130, 12 refs.

Sea ice, Microbiology, Algae, Biomass, Antarctica—McMurdo Sound.

Research during the 1984-1985 season began at winter fly-in (last week of August). A light-perturbation experiment was initiated to study the effect of extremes in downwelling irradiance on the growth and development of the sea-ice microbial community. The following questions addressed the ecology of that community during the seasonal transition from winter (low irradiance) to summer (high irradiance): what are the seasonal patterns of temperature gradients in sea ice under variable snow cover? How does the spectral composition and total downwelling irradiance change during this seasonal transition? How does the growth and metabolism of the sea-ice microbial community change during this seasonal transition? What is the effect of salinity on metabolism of the sea-ice microbial community? What are the dominant "cryopelagic" fauna (Golikov and Scarlato 1973) in McMurdo Sound and the trophodynamics of these organisms? A brief outline is given of measurement methods and of preliminary results developed from the study.

41-2957

Photoadaptive strategies in a natural population of *Phaeocystis pouchetii* in McMurdo Sound.

Palmisano, A.C., et al, *Antarctic journal of the United States*, 1985, 20(5), p.133-134, 8 refs.

Algae, Microbiology, Photosynthesis, Ice cover effect, Ice edge, Antarctica—McMurdo Sound.

Colonies of the microalga *Phaeocystis pouchetii* (Hariot) Lagerheim were studied in McMurdo Sound, both in the water column and in association with sea ice. Prior to the *Phaeocystis* bloom, primary production is virtually restricted to sea-ice microalgae, with only low levels of chlorophyll *a* (less than 0.4 microgram per liter) found in the under-ice water column. With the onset of the *Phaeocystis* bloom in late Dec., *Phaeocystis* accounted for more than 99 percent of the phytoplankton in surface waters of east McMurdo Sound. To examine photoadaptive strategies in *Phaeocystis*, photosynthesis-irradiance [P(I)] relationships were determined using small-volume, short-term (1-hour) incubations at -1.8 C. It was found that *Phaeocystis* demonstrated a unique photoadaptive strategy in response to reduced irradiance beneath annual ice. A series of P(I) curves from samples collected on Dec. 24, 1984, revealed that the photosynthetic efficiency increased by fourfold as the *Phaeocystis* adapted to the reduced irradiance. The maximum photosynthetic rate increased gradually from 3.5 to 7.3 mg carbon per mg chlorophyll *a* per hour.

41-2958

Microheterotrophs in the ice-edge zone: an AMERIEZ study.

Garrison, D.L., et al, *Antarctic journal of the United States*, 1985, 20(5), p.136-137, 7 refs.

Buck, K.R.

Ice edge, Plankton, Ice cores, Microbiology, Ice edge, Ice cover effect, Antarctica—Weddell Sea.

A summary of a study on microheterotrophs, such as heterotropic flagellates and ciliates, begun in the Weddell Sea in 1983 and continued during 1984 and 1985, is presented. The abundance of microheterotrophs in the upper water column for stations under heavy ice cover and along a transect across the ice-edge zone is shown. It is found that most of the microzooplankton biomass is concentrated in the upper 50 m, abundance drops markedly below approximately 50 to 60 m. Microheterotroph populations are much more concentrated in ice than in water but, because ice is limited to the upper 1 to 2 m, the largest fraction of microheterotrophs will still be found in the water column. Microheterotroph populations in ice are often dominated by heterotrophic flagellates, whereas those in water are almost entirely comprised of naked ciliates. Several forms that occur in both ice and water are also recognized. Population studies suggest that naked ciliates are abundant and probably ecologically important in food webs in the ice-edge regions.

41-2959

Phytoplankton from the southwestern Atlantic Ocean.

Fryxell, G.A., et al, *Antarctic journal of the United States*, 1985, 20(5), p.143-145, 15 refs.

Gould, R.W., Jr., Watkins, T.P.

Ice cover effect, Plankton, Sea ice, Ice edge.

Dynamic changes of phytoplankton abundance under frontal conditions presented by the antarctic ice edge have been confirmed by quantitative data from preserved water samples, relative abundance measurements from net hauls, and experiments with living cultures. Materials were collected during two cruises in Nov. and Dec. 1983. Data show an ice-edge phytoplankton increase dominated by the prymnesiophyte, *Phaeocystis pouchetii* (Hariot) Lagerheim, and the diatom, *Thalassiosira gravida* Cleve. Using samples taken under and in the ice, plus those from the open ocean, it is concluded that *T. gravida* was part of austral spring phytoplankton increase inoculated from the west or from the north and travelling south to the ice edge, while *Phaeocystis* was an important part of phytoplankton under the ice and showed a great increase *in situ* as the seasonal ice melted. Away from the ice edge, cell counts were even higher in addition to *Phaeocystis*, the water column was dominated by *Thalassiosira gravida*. The abundance of the prymnesiophyte under and in the ice, as well as a possible sexual stage in the life cycle under the ice suggests that the seed stock of that part of the ice edge "bloom" came from the water column under the ice and from the ice itself. On the contrary, low numbers of *T. gravida* under the ice, as opposed to an average of more than 150,000 cells per liter in all samples taken north of the ice at cruise's end, suggest that this component was radiating principally from outside the ice.

41-2960

Photoadaptations of photosynthesis and carbon metabolism by antarctic phytoplankton: species-specific and community responses.

Rivkin, R.B., et al, *Antarctic journal of the United States*, 1985, 20(5), p.146-147, 8 refs.

Voytek, M.A., Morris, I.

Algae, Plankton, Photosynthesis, Ice cover effect, Ice edge, Antarctica—McMurdo Sound.

Reported herein is a comparison between the photosynthesis-irradiance relationships for two of the more common phytoplankton, *Thalassiosira scotia* and *Fragilariopsis* sp. and that of the phytoplankton community. Plankton were synoptically collected at the ice edge and from under the annual ice approximately 16 km south of the ice edge. In this region the prevailing current flows south along the east side of McMurdo Sound. Phytoplankton would therefore be carried from the ice edge, where they would be exposed to relatively high irradiances, under the annual ice, where irradiances are low. This would thus represent ideal conditions to examine the *in situ* photoadaptations of photosynthesis and carbon metabolism and cell division. The photosynthesis vs. irradiance relationship for the phytoplankton assemblage is shown; the slope of the light-limited region of the photosynthesis vs. irradiance relationship was greater for the diatoms isolated from under the annual ice (i.e., low-light adapted) compared to the ice edge (i.e., high-light adapted). The results of this study serve to emphasize the differences in photoadaptations among species and between species-specific and community responses.

41-2961

Geologic and economical evaluation of oil deposits under extreme climatic conditions. [Geologo-ekonomicheskaia otsenka neftianykh mestorozhdenii v ekstremal'nykh prirodnykh usloviiakh],

D'iachkova, E.A., Moscow, Nedra, 1987, 108p., In Russian with abridged English table of contents enclosed. 43 refs.

Taiga, Natural resources, Tundra, Petroleum industry, Paludification, Geological surveys, Petroleum transportation, Arctic regions, Economic development, Cost analysis, Subarctic landscapes.

41-2962

Main pipelines in areas of complicated engineering and geological conditions. [Magistral'nye truboprovody v slozhnykh inzhenerno-geologicheskikh usloviiakh],

Morozov, V.N., Leningrad, Nedra, 1987, 123p., In Russian with abridged English table of contents enclosed. 48 refs.

Pipelines, Petroleum products, Gas pipelines, Swamps, Foundations, Buildings, Organic soils, Peat, Rheology, Plastic deformation, Settlement (structural).

41-2963
First 7 years (1978-1985) of ice wedge growth, Illisarvik experimental drained lake site, western arctic coast.
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Power line icing, Ice loads, Wind factors, Ice accretion, Power line supports.

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41-2969
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41-2977
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41-2985
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Sea ice distribution, Geophysical surveys, Ice air interface, Ice water interface, Meetings, Ice physics, Remote sensing, Ice mechanics.

41-2986
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41-2987
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Ackley, S.F.
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41-2988
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Ice air interface, Ice water interface, Boundary layer, Snow cover effect, Ice cover effect, Albedo, Humidity, Air temperature, Solar radiation, Wind factors, Analysis (mathematics).

41-2990
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41-2991
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Heat transfer, Mass transfer, Ice cover effect, Turbulent flow, Air water interactions, Albedo, Sea ice distribution, Ice cover thickness, Solar radiation, Seasonal variations, Analysis (mathematics).

41-2992
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41-2993
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Ice mechanics, Sea ice, Pack ice, Velocity, Wind factor, Ocean currents, Dynamic properties, Ice loads, Ice navigation, Ice scoring, Ice edge, Ocean tides, Analysis (mathematics).

41-2994
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Rothrock, D.A., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.551-575, 22 refs.
Ice cover thickness, Sea ice distribution, Acoustic measurement, Boreholes, Theories.

41-2995
Ice dynamics.
Hibler, W.D., III, MP 2211, NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.577-640, Refs. p.637-640. For another source see 39-896 or 14F-30815.
Ice mechanics, Rheology, Drift, Plasticity, Thermodynamics, Oceanography, Sea ice, Ice formation, Ice air interface, Ice strength, Ice cover thickness, Ice models, Sea water, Antarctica—Weddell Sea.
Essential aspects of sea ice dynamics of the Arctic and Antarctic on the geophysical scale were reviewed and the role of ice dynamics in air-sea-ice interaction was discussed. The review is divided into the following components: a) a discussion of the momentum balance describing ice drift, b) an examination of the nature of sea ice rheology on the geophysical scale, c) an analysis of the relationship between ice strength and ice thickness characteristics, and d) a discussion of the role of ice dynamics in the atmosphere-ice-ocean system. Because of the unique, highly nonlinear nature of sea-ice interaction, special attention is given to the ramifications of ice interaction on sea ice motion and deformation. These ramifications are illustrated both by analytic solution and by numerical model results. In addition, the role of ice dynamics in the atmosphere-ice-ocean system is discussed in light of numerical modeling experiments, including a fully coupled ice-ocean model of the Arctic-Greenland-Norwegian seas.

41-2996
Circulation and mixing in ice-covered waters.
Carmack, E.C., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.641-712, Refs. p.701-712.
Oceanography, Ice cover effect, Ocean currents, Turbulent flow, Hydrography, Salinity, Heat transfer, Mass transfer, Dynamic properties, Arctic Ocean, Greenland Sea, Antarctica—Weddell Sea.
Connections between physical oceanography and ice cover namely, how does water circulation influence ice state, and what effects do ice growth and decay have on water movement are discussed. A review of the hydrography of the Arctic Ocean, Greenland Sea and southern ocean is given. Heat and mass transfer mechanisms which are either caused or affected by the presence of ice are reviewed.

41-2997
Atmospheric modelling and air-sea-ice interaction.
Herman, G.F., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.713-754, Refs. p.730-732 and p.751-754.
Ice air interface, Atmospheric circulation, Ice conditions, Climatic factors, Sea ice, Radiation, Hydrodynamics, Boundary layer, Mathematical models, Albedo.

41-2998
Diagnostic studies of large-scale air-sea-ice interactions.
Walsh, J.E., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.755-784, Refs. p.780-784.
Ice air interface, Sea ice distribution, Ice water interface, Meteorology, Oceanography, Mathematical models, Statistical analysis, Ice growth, Ice melting, Ice mechanics.

41-2999
Stochastic description of atmosphere-sea ice-ocean interaction.
Lemke, P., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.785-823, Refs. p.821-823.
Ice air interface, Ice water interface, Ice edge, Sea ice distribution, Ice models, Ice cover thickness, Drift, Mathematical models, Atmospheric circulation, Seasonal variations.
A set of equations is calculated to define the discrete variables incorporated in probabilistic models which are intended to describe the interactions between ocean, sea ice, and atmosphere. The models, assisted by statistical methods, are applied to both arctic and antarctic sea ice variability and its various responses to atmospheric and oceanic dynamics.

41-3000
Seasonal ice zone.
Wadhams, P., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.825-991, Refs. p.975-988.
Sea ice distribution, Ice edge, Ocean waves, Fast ice, Ice breakup, Drift, Ice melting, Seasonal variations, Climatic factors, Analysis (mathematics), Wave propagation.

41-3001
Aspects of the meteorology of the seasonal sea ice zone.
Barry, R.G., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.993-1020, Refs. p.1013-1020.
Sea ice distribution, Ice conditions, Ice air interface, Heat transfer, Meteorological factors, Atmospheric circulation, Seasonal variations, Polynyas.
A relationship is presented between the marginal ice zone and storm tracks. There is a parallelism observed in the Northern Hemisphere but the storm tracks are displaced 7 to 8 deg southward. In the Southern Hemisphere greater similarities are noted between the storm tracks and the location of the Antarctic Convergence Zone.

41-3002
Remote sensing as a research tool.
Carsey, F.D., et al, NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.1021-1098, Refs. p.1082-1091.
Zwally, H.J.
Remote sensing, Sea ice distribution, Ice conditions, Ice edge, Scanning electron microscopy, Albedo, Microwaves, Snow cover effect, Ice cover thickness, Temperature effects.
Remote sensing technology has progressed so far and so rapidly during the last two and a half decades that risky, costly, and time-consuming *in situ* measurements of sea ice have been all but rendered obsolete. Basic issues of air-sea-ice interactions are circulation of atmosphere and ocean, climatology, and material response. Methods for studying these facets are ambient visible light, thermal infrared, passive microwave, active microwave, and altimetry. These issues and methods are defined and discussed. Most applications cited deal with Arctic regions, but numerous, scattered examples showing antarctic pertinency are included.

41-3003
Sea ice data base.
Barry, R.G., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.1099-1134, Refs. p.1127-1134.
Sea ice distribution, Ice conditions, Remote sensing, Microwaves, Mapping.

41-3004
Accuracy of surface geostrophic wind forecasts in the central Arctic.
Moritz, R.E., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.1135-1161, 17 refs.
Wind pressure, Ice mechanics, Pack ice, Statistical analysis, Weather forecasting, Synoptic meteorology, Drift stations.

41-3005
Internal waves in the Arctic Ocean: a review.
Morison, J., NATO Advanced Study Institute on Air-Sea Interaction, Acquafredda di Maratea, Italy, Sep. 28-Oct. 10, 1981. Proceedings. Geophysics of sea ice. Edited by N. Untersteiner. NATO ASI series, Series B: Physics, Vol.146, New York, Plenum Press, 1986, p.1163-1183, 30 refs.
Ocean waves, Ice cover effect, Stresses, Internal waves, Analysis (mathematics), Pressure, Velocity.

41-3006
Preliminary study on snowfall over a basin—1985 radar observation in Shinjo City.
Yagi, T., et al, *Japan. National Research Center for Disaster Prevention. Report,* Dec. 1986, No.38, p.9-24, In Japanese with English summary. 8 refs.
Snowfall, Snow cover distribution, Snow accumulation, Snowstorms, Wind factors, Radar echoes.

41-3007
Traveling path of snow avalanche on real configuration (1).
Nohguchi, Y., *Japan. National Research Center for Disaster Prevention. Report,* Dec. 1986, No.38, p.147-168, In Japanese with English summary. 9 refs.
Avalanche tracks, Avalanche formation, Velocity, Slopes.

41-3008
Model of snow glide acceleration to full depth avalanche release.
Nohguchi, Y., et al, *Japan. National Research Center for Disaster Prevention. Report,* Dec. 1986, No.38, p.169-180, In Japanese with English summary. 2 refs.
Yamada, Y., Ikarashi, T.
Avalanche deposits, Snow slides, Mathematical models, Velocity.

41-3009
Environmental impact analysis process [Pt.2].
Brown, V.G., U.S. Air Force, Electronic Systems Division, Jan. 1987, Var.p.
Environmental impact, Permafrost preservation, Animals, Radar echoes, Damage, Survival, Ecosystems, United States—Alaska.

41-3010
Cold starting ability of in-service M113 vehicles.
Stupich, T.F., et al, *Defence Research Establishment Suffield, Ralston, Alberta. Suffield report,* Nov. 1986, No.430, 17p. + appends., 5 refs.
Shankhla, V.S.
Engine starters, Cold weather performance, Motor vehicles, Temperature effects.

41-3011
Snow removal equipment, snowplows, road cleaning machines. [Putevye strugi, snego-ochistiteli, uborochnye mashiny],
Teklin, V.G., Moscow, Transport, 1986, 232p., In Russian with abridged English table of contents enclosed.
Roads, Railroad tracks, Ice prevention, Winter maintenance, Snow removal, Equipment.

41-3012
Mobile dwellings for the North. [Mobil'noe zhilishche dlia Severa],
Saprykina, N.A., Leningrad, Strolizdat, 1986, 215p., In Russian with abridged English table of contents enclosed. 69 refs.
Houses, Residential buildings, Modular construction, Construction materials, Design, Transportation, Arctic regions.

41-3013
Hydraulic power construction in the North. [Gidroenergeticheskoe stroitel'stvo na Severe],
Kuperman, V.L., et al, Moscow, Energoatomizdat, 1987, 304p., In Russian with abridged English table of contents enclosed. 87 refs.
Myznikov, IU.N., Toropov, L.N.
Electric power, Subarctic landscapes, Industrial buildings, Residential buildings, Foundations, Permafrost beneath structures, Electrical grounding, Hydraulic structures, Dams, Embankments, Permafrost bases, Permafrost control, Artificial thawing, Concrete structures, Winter concreting, Arctic regions.

41-3014
First time above the North Pole. [Vpervye nad poliusom],
Stromilov, N.N., Leningrad, Gidrometeoizdat, 1986, 134p., In Russian with English summary.
Ice surveys, Drift stations, Ice cover thickness, Expeditions, Pressure ridges, Sea ice distribution, Research projects, Drift, Arctic Ocean.

41-3015
Physico-chemical processes of mining. Mathematical models of leaching ores and thawing frozen rocks. [Fiziko-khimicheskie protsessy gornogo proizvodstva. Matematicheskie modeli vyshchelachivaniia rud i ottaivaniia merzlykh porod],
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41-3016
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Ershov, E.D., *Moscow. Universitet. Moscow University geology bulletin,* 1986, 41(1), p.55-67, For Russian original see 41-2540.
Fines, Soil water migration, Frost penetration, Phase transformations, Hygroscopic water, Freeze thaw cycles.

41-3017
Permafrost rocks of the Tsinkhai-Sizan plateau of Tibet and their formation conditions.
Tong, B., et al, *Moscow. Universitet. Moscow University geology bulletin,* 1986, 41(1), p.68-79, For Russian original see 41-2541.
Li, S.
Permafrost origin, Maps, Mapping, Permafrost distribution, Active layer, Permafrost thickness.

41-3018
Relationship of composition and behavior of sandy-clayey soils upon vibration.
Ostrovskaia, O.V., *Moscow. Universitet. Moscow University geology bulletin,* 1986, 41(1), p.112-115, For Russian original see 41-2542. 3 refs.
Fines, Clays, Sands, Vibration, Thixotropy.

41-3019
Transport of water in frozen soil 6. Effects of temperature.
Nakano, Y., et al, *Advances in water resources,* Mar. 1987, 10(1), MP 2213, p.44-50, 9 refs.
Tice, A.R.
Soil water migration, Diffusion, Vapor diffusion, Unfrozen water content, Frozen ground temperature.

41-3020
Blasting and blast effects in cold regions. Part 2: underwater explosions.
Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1986, SR 86-16, 56p., ADA-178 363, For Pt.1 see 40-3304. 17 refs.
Ice blasting, Explosion effects, Shock waves, Ice sheets, Subglacial observations, Cold weather performance, Military operation.
The general characteristics of underwater explosions are reviewed in order to provide a background for the consideration of under-ice explosions. Test data for under-ice explosions and for explosive icebreaking are summarized and interpreted.

41-3021
Recommendations for the factory finishings of new standard house facades for northern towns. [Rekomendatsii po zavodskoi otdelke fasadov domov novykh serii dlia gorodov severnoi zony],
Kholopova, L.I., et al, Moscow, Strolizdat, 1986, 39p., In Russian with abridged English table of contents enclosed.
Zaitseva, G.M., Beliakov, V.P.
Residential buildings, Industrial buildings, Permafrost beneath structures, Concrete structures, Construction materials, Large panel buildings.

41-3022
Slag-pumice concrete for industrial construction. [Konstruktsionnyi shlakopemzobeton dlia promyshlennogo stroitel'stva],
Krichevskii, A.P., et al, Moscow, Strolizdat, 1986, 84p. (Pertinent p.70-84), In Russian with abridged English table of contents enclosed. 59 refs.
Likhachev, V.D., Popov, V.V.
Concrete aggregates, Wastes, Reinforced concretes, Construction materials.

41-3023
Classification of the lichen and green-moss pine forests of the northwestern European USSR. [Klassifikatsiia lishainikovykh i zelenomoshnykh sosnovykh lesov severo-zapada evropeiskoi chasti SSSR],
Sambuk, S.G., *Botanicheskii zhurnal,* Nov. 1986, 71(11), p.1468-1479, In Russian with English summary. 27 refs.
Lichens, Forest soils, Mosses, Forest ecosystems, Cryogenic soils, Plant ecology, Plant physiology.

41-3024
New and rare species of higher aquatic and hydrophilic plants in eastern Bol'shezemel'skaya tundra. [Novye i redkie vidy vysshikh vodnykh i okolovodnykh rastenii na vostoke Bol'shezemel'skoi tundry],
Vekhov, N.V., et al, *Botanicheskii zhurnal,* Dec. 1986, 71(12), p.1619-1620, In Russian. 5 refs.
Kuliev, A.N., Morozov, V.V.
Active layer, Permafrost depth, Plant ecology, Rivers, Estuaries, Tundra.

41-3025
Forest fire effect on southern subarctic tundras in western Chukotskyy Peninsula. [Vliianie pozhara na rastitel'nost' iuzhnykh gipoarkticheskikh tundr na Zapadnoi Chukotke],
Polozova, T.G., *Botanicheskii zhurnal,* Dec. 1986, 71(12), p.1657-1663, In Russian. 14 refs.
Mosses, Permafrost depth, Lichens, Active layer, Forest fires, Soil erosion, Plant ecology, Subpolar regions, Tundra, Ecosystems, Revegetation.

41-3026
Natural revegetation of areas affected by industrial activities in the subpolar Ural Mountains. [Estestvennoe zarastanie tekhnogennykh uchastkov na pripoliarnom Urale],
Martynenko, V.A., *Botanicheskii zhurnal,* Dec. 1986, 71(12), p.1663-1668, In Russian. 12 refs.
Soil erosion, Mountain soils, Forestry, Cryogenic soils, Revegetation, Human factors, Environmental impact, Subpolar regions.

41-3027
Ice pavement detection system; Phase 1, SBIR.
Millimeter Wave Technology, Inc., *Millimeter Wave Technology. MWT document,* Mar. 1987, No.870184-005, 125p., 24 refs.
Road icing, Ice detection, Remote sensing, Pavements, Ice forecasting, Radiometry, Computer applications.

41-3028
Summary of the results of the Canadian participation in the Polar Class trafficability program, 1981-1985.
Glen, I.F., et al, *Transport Canada. Report,* Oct. 1986, TP 7471E, 63p., With French summary. 13 refs.
Menon, B., Roots, T.
Ice navigation, Icebreakers, Ice loads, Ice breaking, Ice pressure, Mathematical models.
This report contains a review of Canadian research conducted from 1981 to 1985 on the loads on and responses of ship hull structures and appendages in ice, based on data from dedicated full-scale trials on U.S. Polar Class icebreakers in the Arctic and the Antarctic. In this review, a complete account of the data collected in each year's trials is given, identifying what parts of the data have been analyzed along with what further analysis is required. The report covers the principal subject areas addressed by the Canadian research program: structural loads and response of appendages, including steering gear and maneuvering performance in level ice. The results of the work have led to a greater understanding of the dynamic response of icebreaker hulls, propulsion system and steering gear to ice impact, and provided a full-scale data base. As well as providing specific performance data for the vessels in thick level ice, the maneuvering tests have been used to develop semi-empirical mathematical models for turning in ice.

41-3029
Mat foundations for offshore structures in Arctic regions.
Yokel, F.Y., et al, *U.S. National Bureau of Standards. [Internal report],* May 1986 (Issued Feb. 1987), NBSIR 86-3419, 146p., 82 refs.
Bea, R.G.
Foundations, Offshore structures, Ice loads, Marine geology, Loads (forces), Ocean bottom, Artificial islands, Design, Caissons, Soil strength, Engineering.

41-3030
Nearshore sediment dynamics—Beaufort Sea. The 1986 monitoring program.
Hodgins, D.O., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.54, 195p., With French summary. 24 refs.
Sayao, O.J., Kinsella, E.D., Morgan, P.W.
Marine deposits, Sediment transport, Bottom sediment, Ice conditions, Water pressure, Ocean waves, Ocean currents, Wind factors, Tides, Statistical analysis, Beaufort Sea.

41-3031
Vertical ice forces on long straight walls.
Christensen, F.T., *Cold regions science and technology,* Apr. 1987, 13(3), p.215-218, 7 refs.
Ice loads, Walls, Ice cracks, Ice plasticity, Ice elasticity, Water level, Analysis (mathematics).

41-3032
Effect of oscillatory loads on the bearing capacity of floating ice covers.
Kerr, A.D., et al, *Cold regions science and technology,* Apr. 1987, 13(3), MP 2216, p.219-224, 9 refs.
Haynes, F.D.
Icing, Vehicles, Static loads, Ice loads, Ice cover strength, Bearing strength, Oscillations, Tests.
Parked vehicles with running engines, or motor driven machinery, subject an ice cover to a static load and to a relatively small oscillatory force, that is caused by the moving parts. Since for the driving frequencies in question the dominant feature is fatigue of the ice cover, while it is undergoing non-elastic time-dependent deflections, an experimental program was initiated to study this phenomenon by running a series of tests in one of the cold rooms at CRREL. An electronically driven shaker placed on the ice cover was used to simulate the dynamic case. A loading device of the same weight and base shape was used as a static control in the tests. Each test consisted of placing these two objects on an ice cover and recording how their vertical displacements vary with time, for a fixed driving frequency of the shaker. A comparison of these two curves established the effect of the oscillating force component. Eight tests were conducted. It was found that for urea ice covers and driving frequencies of 1, 10 and 30 Hz (60, 600, and 1800 rpm) the vibrating shaker increased the vertical downward displacements and substantially decreased the time to breakthrough.

41-3033
Influence of depth hoar on microwave emission from snow in northern Alaska.
Hall, D.K., *Cold regions science and technology,* Apr. 1987, 13(3), p.225-231, 20 refs.
Depth hoar, Microwaves, Snow depth, Snow structure, Radiometry, Reflectivity.

41-3034
Preliminary measurements of terminal crack velocity in ice.
Parsons, B.L., et al, *Cold regions science and technology,* Apr. 1987, 13(3), p.233-238, 15 refs.
Snellen, J.B., Hill, B.
Ice cracks, Ice solid interface, Crack propagation, Fracturing, Velocity, Brittleness, Sea ice, Tests.

41-3035
Snow accumulation on a narrow board.
Kobayashi, D., *Cold regions science and technology,* Apr. 1987, 13(3), p.239-245, 4 refs.
Snow accumulation, Cohesion, Snowflakes, Temperature effects, Air temperature.

41-3036
Short term motion analysis of icebergs in linear waves.
Arunachalam, V.M., et al, *Cold regions science and technology*, Apr. 1987, 13(3), p.247-258, 31 refs.
Murray, J.J., Muggeridge, D.B.
Icebergs, Drift, Ice mechanics, Ocean waves, Velocity, Loads (forces), Boundary value problems, Analysis (mathematics), Computer programs.

41-3037
Sea ice thickness distribution in the Arctic Ocean.
Bourke, R.H., et al, *Cold regions science and technology*, Apr. 1987, 13(3), p.259-280, 31 refs.
Garrett, R.P.
Ice cover thickness, Sea ice distribution, Pressure ridges, Acoustic measurement, Drift, Charts, Seasonal variations, Submarines, Ice melting, Arctic Ocean.

41-3038
Northern lake and reservoir modeling.
Gosink, J.P., *Cold regions science and technology*, Apr. 1987, 13(3), p.281-300, 65 refs.
Lake water, Reservoirs, Lake ice, Ice formation, Ice growth, Water temperature, Models, Heat transfer, Analysis (mathematics).

41-3039
Ground freezing '85—a summary.
Baker, T.H.W., et al, *Cold regions science and technology*, Apr. 1987, 13(3), p.301-306, 2 refs.
Jessberger, H.L., Kay, B.D., Maeno, N.
Soil freezing, Thermal properties, Frost action, Mechanical properties, Meetings, Engineering.

41-3040
One more froude number paradox.
Anno, Y., *Cold regions science and technology*, Apr. 1987, 13(3), p.307, 1 ref. Addendum to 39-2561.
Snowdrifts, Friction, Models, Velocity, Snow physics.

41-3041
Evaluation of grease type ball bearing lubricants operating in various environments. Final status report.
McMurtrey, E.L., *U.S. National Aeronautics and Space Administration. Technical memorandum*, Oct. 1984, NASA TM-86480, 18p., N85-11239, 8 refs.
Lubricants, Cold weather operation, Spacecraft, Low temperature tests, Viscosity.

41-3042
Slope stability; geotechnical engineering and geomorphology.
Anderson, M.G., ed, Chichester, England, John Wiley & Sons, 1987, 648p., Refs. passim. For selected papers see 41-3043 through 41-3045.
Richards, K.S., ed.
Slope stability, Geomorphology, Engineering, Slope processes, Landslides, Soil erosion, Ground water, Snowmelt, Rock mechanics, Periglacial processes, Permafrost, Rheology.

41-3043
Groundwater models for mountain slopes.
Okunishi, K., et al, Slope stability; geotechnical engineering and geomorphology. Edited by M.G. Anderson and K.S. Richards, Chichester, England, John Wiley & Sons, 1987, p.265-285, Refs. p 283-285.
Okimura, T.
Slope stability, Snowmelt, Ground water, Landslides, Rain, Mountains, Soil erosion, Mass transfer.

41-3044
Weathering effects: slopes in mudrocks and over-consolidated clays.
Taylor, R.K., et al, Slope stability; geotechnical engineering and geomorphology. Edited by M.G. Anderson and K.S. Richards, Chichester, England, John Wiley & Sons, 1987, p.405-445.
Cripps, J.C.
Rock mechanics, Slope processes, Weathering, Tundra, Slope stability, Soil composition, Soil strength, Shear strength.

41-3045
Mechanisms of mass movement in periglacial environments.
Harris, C., Slope stability; geotechnical engineering and geomorphology. Edited by M.G. Anderson and K.S. Richards, Chichester, England, John Wiley & Sons, 1987, p.531-559, Refs. p.554-559.
Periglacial processes, Mass transfer, Slope stability, Ground thawing, Permafrost physics, Frost heave, Thawing rate, Active layer, Solifluction, Ice lenses, Ground ice, Rheology.

41-3046
Performance of bituminous surface treatments in Alaska. Final report.
Connor, B., *Alaska. Dept. of Transportation and Public Facilities. Report*, Aug. 1981, FHWA-AK-82-09, 61p., PB82-196 346, 6 refs.
Bitumens, Pavements, Roads, Climatic factors, Surface properties, Embankments, Temperature effects, Seasonal variations, United States—Alaska.

41-3047
Optimum sand specifications for roadway ice control. Final report.
Connor, B., et al, *Alaska. Dept. of Transportation and Public Facilities. Report*, June 1982, FHWA-AK-RD-82-26, 36p., PB83-196 550, 5 refs.
Gaffi, R.
Road icing, Ice control, Sanding, Winter maintenance, Road maintenance, Skid resistance, Sands, Antifreezes, Tests.

41-3048
Evaluation of road construction by surcharge over muskeg.
Johnson, E.G., *Alaska. Dept. of Transportation and Public Facilities. Report*, June 1982, FHWA-AK-RD-83-01, 13p. + append., PB83-100 495, 7 refs.
Embankments, Roads, Settlement (structural), Muskeg, Swamps, Peat, United States—Alaska.

41-3049
Some developments in shaped charge technology.
Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1986, SR 86-18, 29p., ADB-109 567, 16 refs. For another source see 41-2678.
Projectile penetration, Cavitation, Frozen ground strength, Ice strength, Military operation, Materials, Penetration tests, Design.

41-3050
Low temperature effects on sorption, hydrolysis and photolysis of organophosphonates—a literature review.
Britton, K.B., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, SR 86-38, 47 refs., ADA-178 349, Refs. p.42-47.
Pollution, Chemical analysis, Ice composition, Snow composition, Pesticides, Soil composition, Frozen ground, Temperature effects, Environmental impact.
A survey was made of the open literature to determine the information available on the persistence of organophosphonate chemical agents in the environment. This review focuses on low temperature hydrolytic and photolytic degradation of the nerve agents GA (Tabun), GB (Sarin), GD (Soman) and VX. The role of adsorption to ice, snow and frozen soils and sediments is also discussed in relation to these degradative processes. Suggestions are made for the investigation of agent decomposition using simulants. The method proposed for the study of agent persistence is based on the use of linear free energy relationships, which should allow for more reliable prediction of agent behavior than if a single simulant is used as a model compound.

41-3051
Comparative tractive performance of microsiped and conventional radial tire designs.
Blaisdell, G.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, SR 86-39, 11p., ADA-178 355, 4 refs.
Morrison, T.L.
Tires, Traction, Rubber ice friction, Brakes (motion arresters), Design.
The braking and driving tractive effectiveness of aftermarket microsiping of all-season design radial tires was studied as an alternative to standard traction aids such as snow tires, studs, and chains. Microsiping is a process that involves laterally slicing the tires to a depth close to that of the tread depth, thus dividing each tread element into several adjacent, contacting elements. Microsiping removes virtually no material from the tire. From previous studies, it is known that traction on ice is overwhelmingly dependent on the adhesion between the ice surface and the tire tread compound. Since microsiping does not alter the compound, a measurable improvement in traction on ice for several tire types and temperatures, as expected, was not found.

41-3052
MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. MIZEX bulletin 7. *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1986, SR 86-03, 88p., ADA-172 265, Refs. passim. For individual papers see 41-3053 through 41-3061.
Sea ice distribution, Ice edge, Ice melting, Ice deformation, Ice crystal structure, Ice surface, Ocean currents, Ice air interface, Ice water interface, Boundary layer.

41-3053
Note on estimating melt rate in the MIZ.
McPhee, M.G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, p.1-6, ADA-172 265, 5 refs.
Ice melting, Ice edge, Ice water interface, Sea ice, Analysis (mathematics).

41-3054
Kinematics of marginal ice: MIZEX 83.
Ito, H., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, p.7-16, ADA-172 265, 4 refs.
Ice mechanics, Ice edge, Ice water interface, Drift, Boundary layer, Velocity, Ice models.

41-3055
On estimating ice stress from MIZEX 83 ice deformation and current measurements.
Leppäranta, M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, MP 2220, p.17-19, ADA-172 265, 4 refs.
Hibler, W.D., III, Johannessen, O.
Ice deformation, Ice edge, Ice mechanics, Ocean currents, Ocean waves, Wind factors, Stresses, Drift.

41-3056
Crystal structure of Fram Strait sea ice.
Gow, A.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, MP 2221, p.20-29, ADA-172 265, 8 refs.
Tucker, W.B., Weeks, W.F.
Ice crystal structure, Sea ice, Ice composition, Frazil ice, Ice melting, Snow ice, Fram Strait.

41-3057
MIZEX 84 ice surface measurements from the FS *Polarstern*.
Burns, B.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, p.30-40, ADA-172 265, 6 refs.
Larson, R.W., Onstott, R.G.
Ice surface, Dielectric properties, Microwaves, Snow physics, Unfrozen water content, Remote sensing, Snow water content, Ice floes, Snow cover effect, Air temperature, Grain size.

41-3058
1984-1985 current observations in the East Greenland Current: a preliminary description.
Muench, R.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, p.41-53, ADA-172 265, 10 refs.
Lagerloef, G.S.E., Gunn, J.T.
Ocean currents, Moorings, Ice edge, Velocity, Tidal currents, Variations, Greenland Sea.

41-3059
Ice/air feedback mechanism for the migration of the marginal ice zone.
Chu, P.C., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, p.54-64, ADA-172 265, 14 refs.
Ice air interface, Ice edge, Ice mechanics, Ice water interface, Sea ice, Drift, Analysis (mathematics), Boundary layer.

41-3060
Planetary boundary layer in the marginal ice zone.
Brown, R.A., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, p.65-78, ADA-172 265, 14 refs.
Boundary layer, Ice edge, Pack ice, Air water interactions, Heat flux, Wind factors, Stresses, Models.

41-3061
Air-ice-ocean coupled model for the formation of leads or polynyas.
Chu, P.C., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1986, SR 86-03, p.79-88, ADA-172 265, 4 refs.
Polynyas, Ice water interface, Ice air interface, Ice edge, Boundary layer, Analysis (mathematics), Air flow, Drift.

41-3062
Feedback between ice flow, barotropic flow, and baroclinic flow in the presence of bottom topography.
Häkkinen, S., *Journal of geophysical research*, Apr. 1987, 93(C4), p.3807-3820, 22 refs.
Ice edge, Sea ice, Ocean currents, Bottom topography, Mathematical models.

41-3063
Effect of sub-ice mesoscale features within the marginal ice zone of Fram Strait.
Manley, T.O., *Journal of geophysical research*, Apr. 15, 1987, 93(C4), p.3944-3960, 13 refs.
Ice edge, Ocean currents, Fram Strait.

41-3064
Comment on "Atmospheric boundary layer modification in the marginal ice zone" by T.J. Bennett, Jr. and K. Hunkins.
Andreas, E.L., *Journal of geophysical research*, Apr. 15, 1987, 93(C4), p.3965-3969, Includes reply by Bennett and Hunkins. 19 refs. For the paper being critiqued see 41-1861 (I-34897) and for the Andreas et al paper which included the data used by Bennett and Hunkins, see 38-1819 (141-29231).
Sea ice, Ice edge, Ice air interface, Mathematical models.
Andreas briefly commends Bennett and Hunkins for an important contribution to MIZ research but points out numerous serious shortcomings in their methods, data interpretations, misrepresentations, misuse of mathematical equations, and a generally careless approach in the use of his data. In their reply, Bennett and Hunkins seem to agree that the criticism is justified.

41-3065
Integrated groups of concrete-placing equipment in polar regions. [Betonoukladochnye kompleksy v Zapoliar'e],
Nesterov, V.V., et al, *Mekhanizatsiia stroitel'stva*, Feb. 1987, No.2, p.5-7, In Russian.
Khomutinnikov, N.M.
Concrete placing, Construction equipment, Winter concreting, Permafrost beneath structures, Design, Performance.

41-3066
Equipment for mechanized drilling of ice covers. [Tekhnika dlia mekhanizirovannogo bureniia ledianogo pokrova],
Tavrizov, V.M., *Mekhanizatsiia stroitel'stva*, Feb. 1987, No.2, p.13-15, In Russian. 6 refs.
Ice cover thickness, Ice cover strength, Ice drills, Pile driving, Construction equipment.

41-3067
Cutting tool ETR-223 for frozen ground excavation. [Rezhushchil instrument ETR-223 dlia razrabotki merzlykh gruntov],
Bondarenko, V.P., *Mekhanizatsiia stroitel'stva*, Jan. 1987, No.1, p.15-16, In Russian.
Construction equipment, Earthwork, Trenching, Permafrost, Design.

41-3068
Acoustical reflection and scattering from the underside of laboratory grown sea ice: measurements and predictions.
Stanton, T.K., et al, *Acoustical Society of America. Journal*, Nov. 1986, 80(5), MP 2222, p.1486-1494, 30 refs.
Jezek, K.C., Gow, A.J.
Ice acoustics, Sea ice, Ice bottom surface, Acoustic measurement, Sound transmission, Scattering.
Acoustical reflection and scattering properties of the underside of undeformed sea ice which was grown in an outdoor pond were studied. Echo amplitude fluctuations of normal incidence sonar pings (100-800 kHz) were measured as the sonars moved horizontally under the ice and accumulated into echo amplitude histograms. The Rice probability density function (PDF) was fit to the data and the resultant statistical parameter was combined with the Eckart acoustical scattering theory to estimate an rms roughness of the water/ice interface to be 0.3 mm. Because the ice thin sections showed the ice to be porous and permeable at the interface with dendrites 0.5 mm thick, it appeared that the dendrites controlled the scattering. The average reflection coefficient was of the order 0.05. The low reflection coefficient (low compared to the 0.35 value which is predicted from the bulk properties of sea ice) was attributed to the dendritic structure which was porous and permeable at the water/ice interface. From the data and modeling done, scattering, and, hence, echo fluctuations, for normal incidence sonars of various frequencies and beamwidths were also predicted.

41-3069
Effects of ice action under conditions of the lower connections of spherical liquefied-gas tanks. [Efectele actiunii ghetii în conditiile racordurilor inferioare ale rezervoarelor sferice pentru gaze lichefiate],
Pavel, A., *Revista de chimie*, July 1986, 37(7), p.628-630, In Rumanian. 2 refs.
Tanks (containers), Ice formation, Ice pressure, Liquefied gases.

41-3070
On positronium formation in crystalline and amorphous ice at low positron energy.
Mogensen, O.E., *Physics letters A*, Nov. 1986, 118(7), p.357-362, 15 refs.
Ice electrical properties, Ice crystals, Ice structure.

41-3071
Measurement of the speed of sound in ice.
Smith, A.C., et al, *American Institute of Aeronautics and Astronautics. Journal*, Oct. 1986, 24(10), p.1713-1715, 7 refs.
Kishoni, D.
Ice acoustics, Sound transmission, Velocity measurement.

41-3072
Push-moraines and glacier-contact fans in marine and terrestrial environments.
Boulton, G.S., *Sedimentology*, Oct. 1986, 33(5), p.677-698, 20 refs.
Moraines, Periglacial processes, Glacier oscillation, Geomorphology.

41-3073
Rectified tidal currents and tidal-mixing fronts: controls on the Ross Ice Shelf flow and mass balance.
MacAyeal, D.R., Princeton, Princeton University, 1983, 274p., University Microfilms order No.83-18726, Ph.D. thesis. Refs. p.264-274.
Meltwater, Ice shelves, Ice melting, Tidal currents, Mass balance, Ice models, Ice temperature, Ice deformation, Water temperature, Antarctica—Ross Ice Shelf.
Numerical simulations of tides, ocean circulations and ice-shelf flow conducted in this study indicate the following results: vorticity transport caused by tidal pumping across depth contours drives anticyclonic circulation about shallow sub-ice-shelf topography and along the ice front. Heat transported by this circulation accounts for approximately 0.5 m/yr basal melting in the region within 150 km of the ice front. Tidally induced vertical mixing erodes stratification in the remote southeastern section of the sub-ice-shelf cavity where the ice shelf shoals. Efficient vertical heat transfer associated with this mixing catalyzes a large-scale thermohaline circulation. A dense, high-salinity water mass that dominates the lower depths of the open Ross Sea, and that has a temperature 0.3 C warmer than the *in situ* melting point at the ice-shelf base, flows into the sub-ice-shelf cavity along the sea bed. On reaching the vertically well-mixed zone, this water mass is lifted into contact with the ice and flows out of the sub-ice-shelf cavity along the sloping ice shelf base, entering the open Ross Sea at mid-depth. Finite-element ice-shelf flow simulations confirm previous contentions that basal melting increases ice-shelf resistance to deformation. (Auth. mod.)

41-3074
Field research spills to investigate the physical and chemical fate of oil in pack ice.
S.L. Ross Environmental Research, Ltd., *Environmental Studies Revolving Funds. Report*, Feb. 1987, No.62, 95p. + appends., 30 refs.
D.F. Dickins Associates, Ltd.
Oil spills, Ice conditions, Pack ice, Experimentation, Water pollution, Ice floes, Countermeasures.

41-3075
***In situ* burning of oil in experimental ice leads.**
Brown, H.M., et al, *Environmental Studies Revolving Funds. Report*, Feb. 1987, No.64, 27p., With French summary. 6 refs.
Goodman, R.H.
Oil spills, Wind factors, Ice conditions, Polynyas, Countermeasures, Crude oil.

41-3076
Monitoring a sump containing drilling mud with a high salt content.
Nenninger, R.D., *Environmental Studies Revolving Funds. Report*, Mar. 1987, No.66, 47p., With French summary. 8 refs.
Drilling fluids, Permafrost, Salt water, Antifreezes, Soil pollution, Countermeasures, Waste disposal, Monitors, Temperature effects, Canada—Northwest Territories.

41-3077
Baykal-Amur line—a railroad discloses Siberia. [Die Baikal-Amur-Magistrale: eine Eisenbahn erschliesst Sibirien],
Karger, A., *Bild der Wissenschaft*, July 1985, No.7, p.38-48, In German.
Railroads, Cold weather construction, Economic development, Baykal Amur railroad.

41-3078
Snow stars—messages from the sky. [Schneesterne Nachrichten vom Himmel],
Olovsson, I., *Bild der Wissenschaft*, Dec. 1985, No.12, p.50-59, In German.
Snow crystal structure, Snowflakes, Ice crystal structure.

41-3079
Mesoscale nowcasting of sea ice movement through the Bering Strait with a description of major driving forces.
Kozo, T.L., et al, *Monthly weather review*, Jan. 1987, 115(1), p.193-207, 30 refs.
Stringer, W.J., Torgerson, L.J.
Sea ice, Atmospheric pressure, Wind velocity, Drift, Bering Strait.

41-3080
Recurring polynyas over the Cosmonaut Sea and the Maud Rise.
Comiso, J.C., et al, *Journal of geophysical research*, Mar. 15, 1987, 92(C3), p.2819-2833, 23 refs.
Gordon, A.L.
Sea ice, Polynyas, Remote sensing, Heat flux, Convection.
Two polynyas over the deep ocean were observed in the antarctic region during the winter of 1980: one near 43 E, 66 S, Cosmonaut polynya, and another near 2 E, 64 S, Maud Rise polynya. The time history of these two polynyas was examined on an alternate day basis using ice concentration maps from the Nimbus 7 scanning multichannel microwave radiometer (SMMR). A quantitative analysis of a study area around it shows that the totally enclosed Cosmonaut polynya attained a maximum size on July 25, 1980, with an open water area of as much as 137,700 sq km. This polynya lasted for a few weeks, disappeared on Aug. 16, 1980, and was not observed for the rest of the winter. Similar polynyas in the same region have occurred for several years, including 1973, 1975, 1979, 1982, and 1986. The Maud Rise polynya, on the other hand, was observed as a reduction in ice concentration to about 37% within the SMMR resolution of about 900 sq km. However, the open water area in the region amounted to 92,800 sq km on July 20, and the polynya recurred several times during the same winter period. It is proposed that both polynyas are products of deep-reaching convection which introduces warmer deep water into the surface layer. In this way, they are viewed as sensible heat polynyas in that they are maintained by oceanic heat. The oceanographic settings of these two polynyas are similar. The hydrographic data at both sites indicate the existence of localized doming of the pycnocline. This brings warmer, saltier deep water closer to the sea surface, an effective preconditioner for deep-reaching convection.

41-3081
Rock glaciers of the Dzhetim-Bel Range, Central Tien Shan. [Kamennye gletchery khrebta Dzhetim-Bel' (Vnutrennii Tian'-Shan')],
Tarakanov, A.G., *Geograficheskoe obshchestvo SSSR. Izvestiia*, Jan.-Feb. 1987, 119(1), p.63-67, In Russian. 3 refs.
Slope processes, Rock streams, Moraines, Rock glaciers, Mountain glaciers, Alpine landscapes.

41-3082
Transformation of spring-flood runoff during swamp drainage in the forest zone. [Preobrazovanie stoka vesennego polovod'ia pri osushenii bolotnykh massivov lesnoĭ zony],
Pakutin, A.V., *Geograficheskoe obshchestvo SSSR. Izvestiia*, Jan.-Feb. 1987, 119(1), p.67-70, In Russian. 10 refs.
Land reclamation, Paludification, Forest land, Drainage, Peat.

41-3083
Pale yellow soils of the central Siberian Plateau.
Sokolov, I.A., *Soviet soil science*, July-Aug. 1986, 18(4), p.25-38, Translated from Pochvovedenie. 17 refs.
Forest soils, Cryogenic soils, Soil profiles, Ground ice, Permafrost origin, Taiga.

41-3084
Winter navigation—a Finnish specialty.
Varsta, P., *Navigator. The Finnish maritime journal*, July 1985, p.10-13.
DLC VK96.F5N38
Ice navigation, Icebreakers, Ice cover strength, Ice cover thickness, Ice breaking, Bubbling.

41-3085
Arctic offshore research in VTT structural laboratories.
Jumppanen, P., *Navigator. The Finnish maritime journal*, July 1985, p.51-53.
DLC VK96.F5N38
Research projects, Offshore structures, Concrete structures, Ice loads, Tests, Construction materials.

41-3086
Ice scour and seabed engineering; proceedings of a Workshop on Ice Scour Research.
Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, 322p., Refs. passim. For selected papers see 41-3087 through 41-3123.
Lewis, C.F.M., ed, Parrott, D.R., ed, Simpkin, P.G., ed, Buckley, J.T., ed.
Ice scoring, Ocean bottom, Bottom topography, Icebergs, Bottom sediment, Marine geology, Meetings, Underground pipelines.

41-3087
Marine pipeline design in ice environments.
McKeehan, D.S., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.9-17.
Ice scoring, Underground pipelines, Ocean bottom, Trenching, Engineering, Maintenance, Ice conditions, Hydraulic structures.

41-3088
Engineering aspects of ice gouging.
Bea, R.G., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M Lewis, et al, p.18-28, 4 refs.
Ice loads, Ice scoring, Bottom sediment, Engineering, Underground pipelines, Maintenance, Shear strength, Ocean bottom.

41-3089
Engineering applications and risk assessment: summary and discussion.
Allan, D., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.31-37, 1 ref.
Roggensack, B.
Engineering, Ice scoring, Pipelines, Offshore structures, Hydraulic structures, Design, Ocean bottom, Damage, Equipment.

41-3090
Ice-gouge studies, Alaskan Beaufort Sea.
Barnes, P.W., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.41-50, 4 refs.
Reimnitz, E.
Ice scoring, Ocean bottom, Bottom sediment, Erosion, Distribution, Statistical analysis, Beaufort Sea.

41-3091
Incursion of Alaskan multiyear ice features and their associated scours in the Canadian Beaufort Sea.
McGonigal, D., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.51-59, 2 refs.
Stirbys, A.F., Lussenberg, J.L.
Ice scoring, Ice conditions, Grounded ice, Ocean bottom, Airborne radar, Side looking radar, Beaufort Sea.

41-3092
Hydrodynamic forces and iceberg stability.
Bass, D.W., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.60-62, 2 refs.
Peters, G.R.
Icebergs, Ice scoring, Hydrodynamics, Loads (forces), Stability, Computer applications.

41-3093
Relict ice scours on King William Island, N.W.T.
Woodworth-Lynas, C.M.T., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.64-72, 2 refs.
Christian, D., Seidal, M., Day, T.
Ice scoring, Ocean bottom, Bottom topography, Sediment transport, Mapping, Models.

41-3094
Grand Bank pits: description and postulated origin.
Barrie, J.V., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.73-77, 5 refs.
Collins, W.T., Parrott, D.R.
Ice scoring, Ocean bottom, Bottom topography, Icebergs, Deformation, Acoustic measurement, Geophysical surveys.

41-3095
Deformation by ice of sediment remanent magnetism.
Day, T., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.78-81, 1 ref.
Ice scoring, Bottom sediment, Magnetic surveys, Lacustrine deposits, Deformation, Magnetometers.

41-3096
Iceberg scouring and its influence on seabed conditions: investigation and proposed model for the Norwegian shelf.
Lien, R., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.87-96.
Icebergs, Ice scoring, Ocean bottom, Bottom topography, Pipelines, Models, Acoustic measurement, Norway.

41-3097
Review of deterministic ice-scour models.
Comfort, G., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.97-108, 5 refs.
Graham, B.
Ice scoring, Ocean bottom, Bottom topography, Ice conditions, Models, Ocean currents, Wind factors, Bottom sediment, Soil physics.

41-3098
Iceberg-scour modelling at Memorial University of Newfoundland.
Chari, T.R., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.109-117, 4 refs.
Icebergs, Ice scoring, Ocean bottom, Models, Tests, Canada—Newfoundland.

41-3099
Hibernia ice-scour model studies.
Schoenthaler, L., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.118-121.
Icebergs, Ice scoring, Marine deposits, Hydrodynamics, Models, Ice solid interface, Ocean bottom.

41-3100
Iceberg crater chains and scour up- and downslope.
Bass, D., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.122-128, 1 ref.
Woodworth-Lynas, C.
Icebergs, Ice scoring, Ocean bottom, Bottom topography, Models, Ice volume.

41-3101
Dynamics of Iceberg Grounding and Scouring (DIGS) experiment.
Lewis, C.F.M., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.129-131.
Icebergs, Ice scoring, Grounded ice, Drift, Ice mechanics, Experimentation.

41-3102
Regional geology and seabed dynamics at the proposed iceberg scour (DIGS) experiment site.
Josenhans, H.W., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.132-137, 6 refs.
Icebergs, Ice scoring, Bottom sediment, Ocean bottom, Marine geology, Soil physics, Bottom topography.

41-3103
Iceberg dynamics of the DIGS experiment.
Lever, J., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.138-142, 3 refs.
Icebergs, Ice scoring, Drift, Ice mechanics, Grounded ice, Experimentation.

41-3104
Geotechnical aspects of the DIGS experiment.
Moran, K., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.143-147, 1 ref.
Icebergs, Ice scoring, Grounded ice, Ice mechanics, Drift, Experimentation.

41-3105
Seabed response to ice forces: summary and discussion.
Roggensack, W., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.148-153.
Chari, T.R.
Ice scoring, Ice pressure, Ocean bottom, Ice loads, Soil structure, Marine deposits.

41-3106
Ocean-bottom sea-ice scour: a computer-based data management system.
Gilbert, G.R., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.157-166, 5 refs.
Blasco, S.M.
Ice scoring, Ocean bottom, Echo sounding, Computer applications, Sea ice, Pipelines, Design, Acoustic measurement.

41-3107
Regional correlation of Beaufort Sea ice scour extreme depth and relative age with environmental factors.
Shearer, J., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.167-169.
Blasco, S.M.
Ice scoring, Ocean bottom, Bottom topography, Distribution, Mapping, Sea ice, Acoustic measurement, Age determination, Beaufort Sea.

41-3108
Regional iceberg scour distribution and variability on the eastern Canadian continental shelf.
King, E.L., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.172-181, 8 refs.
Gillespie, R.T.
Icebergs, Ice scoring, Bottom topography, Distribution, Oceanography, Canada—Northwest Territories—Baffin Island.

41-3109
Iceberg scouring on Saglek Bank, northern Labrador Shelf.
Todd, B.J., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.182-193, 5 refs.
Icebergs, Ice scoring, Ocean currents, Drift, Distribution.

41-3110
Documentation of iceberg groundings.
El-Tahan, M., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.194-199, 1 ref.
El-Tahan, H., Moran, K.
Icebergs, Ice scoring, Grounded ice, Radar echoes, Distribution.

41-3111
Grand Banks ice-scour catalogue.
Schoenthaler, L., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.200-203.
Ice scoring, Acoustic measurement, Icebergs, Canada—Newfoundland—Grand Banks.

41-3112
Regional ice-scour studies and data bases: issues and concerns.
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Ice scoring, Ocean bottom, Engineering, Design, Distribution.

41-3113
Estimating ice-scour frequency and risk to buried pipelines.
Pilkington, R., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.213-220, 7 refs.
Ice scoring, Marine deposits, Ocean bottom, Bottom sediment, Distribution, Underground pipelines, Safety, Engineering.

41-3114
Numerical model for calculating spatial distribution and mean frequency of iceberg grounding events.
D'Apollonia, S.J., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.221-232, 19 refs.
Lewis, C.F.M.
Icebergs, Ice scoring, Grounded ice, Marine geology, Ocean bottom, Bottom topography, Distribution, Mathematical models.

41-3115
Palynology as a method for dating iceberg scours.
Mudie, P.J., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.233-239, 11 refs.
Icebergs, Ice scoring, Palynology, Marine deposits, Age determination, Fossils, Pollen, Pleistocene, Drill core analysis.

41-3116
Risk assessment for iceberg-scour damage: Labrador Sea and Grand Banks.
Allan, D., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.240-248, 1 ref.
Icebergs, Ice scoring, Ocean bottom, Hydraulic structures, Damage, Underground pipelines, Safety, Labrador Sea, Canada—Newfoundland—Grand Banks.

41-3117
Report on a non-deterministic model of populations of iceberg scour depths.
Gaskill, H., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.249-258, 2 refs.
Icebergs, Ice scoring, Ocean bottom, Bottom topography, Models, Underground pipelines, Safety.

41-3118
Preliminary simulation of the formation and infilling of sea ice gouges.
Weeks, W.F., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, MP 2218, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.259-268, 6 refs.
Tucker, W.B., Niedoroda, A.
Sea ice, Ice scoring, Marine deposits, Ocean bottom, Sediment transport, Distribution, Models, Computer applications, Statistical analysis, Beaufort Sea.

41-3119
Iceberg-grounding study, Labrador well-site observations.
Woodworth-Lynas, C.M.T., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.269-283, 5 refs. For more detailed report see 39-2559.
Simms, A.
Icebergs, Ice scoring, Grounded ice, Radar echoes, Statistical analysis, Models.

41-3120
Towards repetitive mapping of ice scours in the Beaufort Sea.
Shearer, J., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.284-286, 2 refs.
Stirbys, A.F.
Ice scoring, Ocean bottom, Bottom topography, Mapping, Acoustic measurement, Radar echoes, Beaufort Sea.

41-3121
Design of a repetitive-mapping network for ice scour: east coast.
Hodgson, G.J., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.287-292, 5 refs.
Ice scoring, Ocean bottom, Marine geology, Distribution, Mapping, Design.

41-3122
Some recent studies relating to the determination of pipeline depths.
Marcellus, R.W., et al, *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.295-303, 8 refs.
Morrison, T.B.
Ice scoring, Underground pipelines, Hydraulic structures, Echo sounding, Safety, Distribution.

41-3123
Ice-scour research: long-term plan for ESRF.
Livingstone, W.R., *Environmental Studies Revolving Funds. Report,* Dec. 1986, No.49, Workshop on Ice Scour Research, Calgary, Alta., Feb. 5-6, 1985. Proceedings. Ice scour and seabed engineering. Edited by C.F.M. Lewis, et al, p.307-313, 15 refs.
Ice scoring, Hydraulic structures, Research projects, Underground pipelines, Safety, Computer applications, Statistical analysis.

41-3124
Glacio-fluvial sediment transfer.
Gurnell, A.M., ed, Chichester, England, John Wiley & Sons, 1987, 524p., The book consists of 17 papers. Refs. passim.
Clark, M.J., ed.
Glacial deposits, Glacial hydrology, Suspended sediments, Sediment transport, Subglacial drainage, Alpine glaciation, Periglacial processes, Moraines, Geomorphology, Mountains, Hydrogeology, Electrical resistivity.

41-3125
Construction of deep foundations. [Stroitel'stvo fundamentov glubokogo zalozheniia]
Glotov, N.M., et al, Moscow, Transport, 1985, 248p., In Russian with abridged English table of contents enclosed.
Silin, K.S.
Offshore structures, Hydraulic structures, Rivers, Bridges, Swamps, Foundations, Piles, Artificial islands, Permafrost beneath structures, Caissons, Concrete structures, Piers, Deformation, Construction materials, Settlement (structural).

41-3126
Geomechanical studies of power supply structure foundations. [Geomekhanicheskie issledovaniia osnovanii energeticheskikh sooruzhenii]
Sapegin, D.D., ed, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1985, Vol.182, 120p., In Russian. For selected papers see 41-3127 through 41-3130. Refs. passim.
Rock fills, Electric power, Earth fills, Industrial buildings, Foundations, Permafrost beneath structures, Hydraulic structures, Earth dams, Concrete structures, Ground ice, Porosity, Phase transformations, Ice formation, Soil temperature, Thermal conductivity, Measuring instruments.

41-3127
Studies on frost resistance of ash and ash-slag materials for use in foundations—the case of the Barabinskaya State Regional Electric Power Plant. [Issledovanie merzlotnykh svoistv zoly i zoloshlakovykh materialov kak osnovanii sooruzhenii na primere Barabinskoi GRES]
Golli, O.R., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1985, Vol.182, p.52-56, In Russian. 12 refs.
Electric power, Industrial buildings, Foundations, Roadbeds, Embankments, Earth fills, Frost resistance, Frost heave.

41-3128
Consolidation equations of Biot-Florin for three-phase soils. [Uravneniia konsolidatsii Florina-Bio dlia trekhfaznogo grunta]
Gorelik, L.V., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1985, Vol.182, p.56-62, In Russian. 14 refs.
Lykova, N.I.
Soil compaction, Soil water migration, Ground ice, Ground thawing, Mathematical models.

41-3129
Seismoacoustic studies of deformability of frozen and thawed calcareous clay soils. [Seismoakusticheskie issledovaniia deformiruemosti merzlykh i talykh glinisto-karbonatnykh porod]
Voronkov, O.K., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1985, Vol.182, p.88-95, In Russian. 11 refs.
Fines, Seismic velocity, Acoustic measurement, Deformation, Clays, Frozen ground physics, Ground thawing.

41-3130
Determining heat conductivity coefficients of coarse grained materials used in embankment construction. [Opredelenie effektivnogo koeffitsienta teploprovodnosti gruntovykh krupnozernistykh materialov nabrosnykh plotin]
Gorokhov, E.N., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1985, Vol.182, p.105-110, In Russian. 11 refs.
Dams, Thermal conductivity, Embankments, Measuring instruments, Rock fills, Earth fills, Porosity, Ice formation, Ice volume, Hydraulic structures.

41-3131
Sea ice microbial communities. 6. Growth and primary production in bottom ice under graded snow cover.
McGrath Grossi, S., et al, *Marine ecology progress series,* Jan. 27, 1987, 35(1-2), p.153-164, Refs. p.163-164.
Kottmeier, S.T., Moe, R.L., Taylor, G.T., Sullivan, C.W.
Algae, Biomass, Cryobiology, Microbiology, Photosynthesis, Ice growth, Ice cover effect, Snow cover effect, Subglacial observations, Antarctica—McMurdo Sound.
The effect of under-ice irradiance on *in situ* growth and production of sea ice microalgae was investigated at McMurdo Sound in 1982. Five 100 sq m quadrats on annual ice were delimited in early Oct. with 0.5, 10, 25 and 100 cm snow cover; under-ice irradiances ranged from <0.02 to 100 micro-E/sq m/s. Standing crop, growth rate and photosynthetic rate were greatest in snow-free ice (Q-0) where chlorophyll *a* concentration increased from 0.1 to 76 mg/sq m in the platelet layer and from 0.05 to 9 mg/sq m in bottom congelation ice over 5 wk. Blooms occurred later in quadrats with 5, 10, and 25 cm cover; however, growth rates were less than half that in Q-0. The hypothesis that microalgal standing crop in bottom ice approximates cumulative production was tested. Peak algal standing crop at Q-0 was estimated to be 3.2 g C/sq m, based on a carbon to chlorophyll ratio of 38. However, net primary production based on *in situ* measurements of photosynthetic rate was 10-fold higher, at 41 g C/sq m. This finding suggests that previous estimates of sea ice production must be revised sharply upward. (Auth.)

41-3132
Sea ice microbial communities. 7. Changes in under-ice spectral irradiance during the develoomments of antarctic sea ice microalgal communities.
Palmisano, A.C., et al, *Marine ecology progress series*, Jan. 27, 1987, 35(1-2), p.165-173, Refs. p.172-173.
Beeler SooHoo, J., Moe, R.L., Sullivan, C.W.
Algae, Sea ice, Ice cover effect, Snow cover effect, Biomass, Cryobiology, Photosynthesis, Antarctica—McMurdo Sound.
Changes in spectral irradiance beneath annual sea ice were measured during the development of sea ice microalgal communities in McMurdo Sound. Five different light regimes were initially established by varying surface snow cover on 10 m x 10 m sea ice quadrats. The presence of ice algae in quadrats with <5 cm snow cover was indicated by a spectral shift with increased attenuation between 400 and 550 nm and at 671 nm, wavelengths absorbed by diatom pigments. Snow cover had a profound effect on both the rate of community development and community loss by ice ablation. A simple model of factors determining changes in ice algal biomass is described. (Auth.)

41-3133
Sea ice microbial communities. 8. Bacterial production in annual sea ice of McMurdo Sound, Antarctica.
Kottmeier, S.T., et al, *Marine ecology progress series*, Jan. 27, 1987, 35(1-2), p.175-186, Refs. p.184-186.
McGrath Grossi, S., Sullivan, C.W.
Algae, Sea ice, Microbiology, Photosynthesis, Snow cover effect, Biomass, Ice cover effect, Antarctica—McMurdo Sound.
Described are: the seasonal net accumulation (from microscopical direct counts), the rate of instantaneous growth (from H-3-thymidine incorporation), and the importance of carbon production by bacteria in annual sea ice of McMurdo Sound during the 1982 spring and summer bloom of microalgae. Bacterial number and biomass increased less than 10-fold in sea ice over a period of 2 1/2 mo; yet bacterial cell production rate increased by more than 3 orders of magnitude. Bacterial growth increased throughout the microalgal bloom, but final bacterial biomass was less than 1% of microalgal biomass. Growth rates calculated from estimates of net accumulation of cells and thymidine incorporation were similar for congelation ice beneath 3 cm of snow and platelet ice beneath 0 to 5 cm of snow. Bacterial production (cell and carbon) lagged behind at first, but later paralleled the rate of primary production in sea ice. Bacterial carbon production was only 9% of primary production, while maximal rates of growth (micron = 0.02 to 0.2/d) were comparable to those reported for bacterioplankton of the southern ocean. Bacterial biomass and production in sea ice were equivalent to that found in several m of underlying seawater. Significant correlations were found between bacterial production (cell, biomass, and thymidine incorporation per cell) and growth, and microalgal biomass, production, and growth, suggesting potential coupling between bacterial growth and microalgal photosynthetic metabolism in sea ice. (Auth.)

41-3134
Topographic Rossby waves over Antarctica.
Egger, J., et al, *Tellus*, Mar. 1987, 39A(2), p.110-115, 10 refs.
Fraedrich, K.
Atmospheric circulation, Ice sheets, Topographic effects, Antarctica.
The linear barotropic vorticity equation on an infinite polar *f*-plane is solved for free eigenmodes supported by the zonally averaged topography of Antarctica. Analytic solutions are derived for an exponential orographic profile. The structure and frequency of these topographic Rossby waves are discussed and compared to observations. (Auth.)

41-3135
Comparison of a simple planetary boundary layer model with measurements of a turbulent boundary layer under pack ice.
Myrhaug, D., *Continental shelf research*, Feb. 1987, 7(2), p.135-148, 9 refs.
Ocean currents, Pack ice, Drift, Arctic Ocean.

41-3136
Mesoscale features of the Michigan land breeze using PAM II temperature data.
Schoenberger, L.M., *Weather and forecasting*, Dec. 1986, 1(3-4), p.127-135, 10 refs.
Snowfall, Lake effects.

41-3137
Cloud physics of weather modification, pts. 1 and 2.
Braham, R.R., Jr., *World Meteorological Organization. WMO bulletin*, July-Oct. 1986, 35(3,4), p.215-222, 308-315, 25 + 10 refs.
Cloud physics, Weather modification, Cloud seeding, Ice nuclei.

41-3138
Supercritical flume for measuring sediment-laden streamflow.
Baker, M.B., Jr., *Water resources bulletin*, Oct. 1986, 22(5), p.847-851, 18 refs.
Snowmelt, Flow measurement, Water flow.

41-3139
Snow distribution patterns in the alpine krummholz zone.
Daly, C., *Progress in physical geography*, June 1984, 8(2), p.157-175, Refs. p.172-175.
Forest lines, Alpine tundra, Snow cover distribution, Snow cover effect, Blowing snow, Snowdrifts.

41-3140
Corps of engineers seek ice solutions.
Frankenstein, G.E., *Wisconsin professional engineer*, Apr. 1987, 28(3), MP 2219, p.5-7, 5 refs.
Laboratories, Ice mechanics, Models, Ice pressure, River ice, Hydraulic structures, Ice jams, U.S. Army CRREL.

41-3141
Comparison of the landforms and sedimentary sequences produced by surging and non-surging glaciers in Iceland.
Sharp, M.J., Aberdeen, Scotland, University, Nov. 1982, 380p. + appends., Ph.D. thesis. Refs. p.358-380.
Landforms, Sedimentation, Glacier surges, Glacial deposits, Iceland.

41-3142
Atmospheric icing on communication masts in New England.
Mulherin, N.D., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, CR 86-17, 46p., ADA-17? 347, 34 refs.
Antennas, Icing, Towers, Ice formation, Precipitation (meteorology), Cost analysis.
Rime icing and freezing precipitation are of concern to the radio and television broadcasting industry. This report contains the results of a study seeking to document the severity and extent of transmitter tower icing and related problems in the northeastern United States. Information was obtained via mail questionnaire and telephone interviews with 85 station owners and engineers concerning 118 different stations. Results show that television and FM broadcasters are seriously impacted by tower icing; however, AM operators are usually not affected by expected New England icing levels. Combined annual costs for icing protection and icing-related repairs averaged $121, $402 and $3066 for AM, FM and TV stations respectively. None of the AM stations polled employ any icing protection measures whereas all the TV stations do. The percentage of FM stations having icing protection in the three northern states averaged 80%, indicating a significant concern for icing in that region. In contrast, the percentage of FM stations with icing protection was 63.5% for the southern New England states. The usage of guyed versus non-guyed towers was a poor indicator of icing costs. However, the factors of increasing mast height and mast top elevation are significant to increasing costs.

41-3143
Frost action predictive techniques for roads and airfields. A comprehensive survey of research findings.
Johnson, T.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, CR 86-18, 45p., ADA-178 243, 32 refs.
Berg, R.L., Chamberlain, E.J., Cole, D.M.
Frost heave, Roads, Airports, Freeze thaw cycles, Frost resistance, Frost penetration, Pavements, Subgrade soils, Design, Mathematical models, Frost action.
Findings from a six-year field and laboratory program of frost-action research in four areas are summarized. Research on the first topic, frost-susceptibility index tests, led to selection of the Corps of Engineers frost design soil classification system as a useful method at the simplest level of testing. At a much more complex level, a new freezing test combined with a CBR test after thawing is recommended as an index of susceptibility to both frost heave and thaw weakening. Under the second topic, a soil column and dual gamma system were developed and applied to obtain soil data used in improving and validating a mathematical model of frost heave, the objective of the third topic. The model was effectively improved, a probabilistic component was added, and it was successfully tested against field and laboratory measurements of frost heave. A thaw consolidation algorithm was added, which was shown to be useful in predicting the seasonal variation in resilient modulus of granular soils, the objective of the fourth topic. A laboratory testing procedure was developed for assessing the resilient modulus of thawed soil at various stages of the recovery process, as a function of the applied stress and the soil moisture tension, which increases as the soil gradually desaturates during recovery. The procedure was validated by analyzing deflections measured on pavements by a falling-weight deflectometer. Frameworks for implementing findings from the principal research topics are outlined.

41-3144
Rime meteorology in the Green Mountains.
Ryerson, C.C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Jan. 1987, CR 87-01, 46p., ADA-178 358, 33 refs.
Icing, Hoarfrost, Antennas, Ice detection, Synoptic meteorology, Meteorological factors, Mountains, Variations.
Rime icing is a frequent and severe problem in higher elevations of the Green Mountains because it impacts radio and television antennas and ski lifts and could affect high elevation wind machine performance. Rime meteorology, measuring equipment performance, and variation with elevation were analyzed statistically on Mt. Mansfield and Madonna Peak, Vermont, during the winters of 1982-83 and 1983-84. Weather conditions were measured from surface weather observations, from rawinsonde 850 mb records, and from synoptic weather maps. Rime intensity with time was measured with a Rosemount antenna deicing system on Mt. Mansfield, and rime accretion was measured from collectors installed from 643 to 1227 m on the two peaks. Most rime events in the Green Mountains are of low intensity, with greatest intensities found in warmer, subfreezing air within 5 C of the dew point. Rime was usually most intense within deep low pressure systems, and was associated with 9- to 10-tenths cloud cover and light precipitation. Rime was rarely associated with high pressure. Most rime events occurred within cold and occluded fronts in southerly to westerly winds.

41-3145
Sea ice dynamics. Mathematical models. [Dinamika morskikh l'dov. Matematicheskie modeli],
Timokhov, L.A., et al, Leningrad, Gidrometeoizdat, 1987, 272p., In Russian with English table of contents enclosed. 154 refs.
Khelsin, D.E.
Ice physics, Sea ice distribution, Ice cover thickness, Ice water interface, Deformation, Mathematical models, Drift, Hydraulic structures, Ice pressure, Pressure ridges, Ice loads, Ice navigation, Wind factors, Statistical analysis.

41-3146
Effects of four environmental variables on photosynthesis-irradiance relationships in antarctic sea-ice microalgae.
Palmisano, A.C., et al, *Marine biology*, Mar. 1987, 94(2), p.299-306, 36 refs.
SooHoo, J.B., Sullivan, C.W.
Marine biology, Sea ice, Microbiology, Algae, Antarctica—McMurdo Sound.
The effects of temperature, salinity, growth irradiance and diel periodicity of incident irradiance on photosynthesis-irradiance *(P-I)* relationships were examined in natural populations of sea-ice microalgae from McMurdo Sound in the austral spring of late 1984 [illegible]th photosynthetic rate at optimum irradiance and initial slo[illegible] *P-I* curve were temperature-dependent reaching optimal ra[illegible] approximately +6 and +2 C, respectively. *P-I* relationships showed little difference at 20 and 33 per mill S; however, no measurable photosynthesis by sea-ice microalgae was detected in a 60 per mill S solution of brine collected from the upper layers of congelation ice. Although diel periodicity characteristic of the under-ice light field appeared to have little effect on *P-I* relationships, changes in growth irradiance had a profound effect. The effects of these environmental factors on ice algal photosynthesis may influence the distribution of microalgae in sea-ice environments. (Auth. mod.)

41-3147
Supply of snow in the Eastern Highlands of Scotland: 1954-5 to 1983-4.
Davison, R.W., *Weather*, Feb. 1987, 42(2), p.42-50, 15 refs.
Snowfall, Snowdrifts, Snow cover distribution, Meteorological data, United Kingdom—Scotland.

41-3148
Life upon the permafrost.
Bruemmer, F., *Natural history*, Apr. 1987, 96(4), p.30-39.
Permafrost hydrology, Tundra, Active layer.

41-3149
Arctic seas that never freeze.
Dunbar, M.J., *Natural history*, Apr. 1987, 96(4), p.50-53.
Polynyas, Ice edge.

41-3150
Polarization and Brewster angle properties of light pillars.
Sassen, K., *Optical Society of America. Journal. A*, Mar. 1987, 4(3), p.570-580, 12 refs.
Ice crystal optics, Optical phenomena.

41-3151
Faceted snow crystals.
Hallett, J., *Optical Society of America. Journal. A*, Mar. 1987, 4(3), p.581-588, 33 refs.
Snow crystal structure, Ice crystal optics, Optical phenomena, Snow crystal growth, Refraction.

41-3152
Multiple-scattering effects in halo phenomena.
Tränkle, E., et al, *Optical Society of America. Journal. A*, Mar. 1987, 4(3), p.591-599, 7 refs.
Greenler, R.G.
Light scattering, Ice crystal optics, Ice crystal structure.

41-3153
Scattering photometer for measuring single ice crystals and evaporation and condensation rates of liquid droplets.
Pluchino, A., *Optical Society of America. Journal. A*, Mar. 1987, 4(3), p.614-620, 26 refs.
Light scattering, Ice crystal structure, Photometers, Drops (liquids).

41-3154
Different domains of application of cold. Manual. [Razlichnye oblasti primenenna kholoda. Spravochnik],
Bykov, A.V., ed, Moscow, Agropromizdat, 1985, 271p. (Pertinent p. 42-66, 99-125, 222-260), In Russian with abridged English table of contents enclosed.
Artificial freezing, Frozen ground, Concrete structures, Artificial ice, Ice accretion, Brines, Sea water freezing, Desalting.

41-3155
Nitrate deposition in Antarctica; temporal and spatial variations.
Laird, C.M., Lawrence, University of Kansas, 1986, 268p., Ph.D. thesis. Refs. p.218-227.
Ice cores, Ice composition, Paleoclimatology, Snow stratigraphy, Periodic variations, Snow composition, Snow accumulation, Antarctica—South Pole, Antarctica—Ross Ice Shelf.
Through ultraviolet spectrophotometry, snow samples covering 15 years were analyzed from the surface and to 1.7-m depth at the South Pole and on the Ross Ice Shelf for nitrate concentration and deposition. Among the results summer surface nitrate levels are nearly three times the annual mean; nitrate concentration spikes are real and probably reflect incomplete mixing of the summer and winter layers; unusually high nitrate levels were observed for 1984; a fairly strong temporal signal was found in the nitrate record, but horizontal variability is significant as well; calculations indicate that solar-charged particles are likely to modulate nitrate levels in the antarctic ice sequence at semi-periodic intervals as sharp one- or two-year peaks, and nitrate levels may vary slowly with time in response to changes in biological activity and climate. The findings indicate that antarctic nitrate profiles in the ice sequence are probably reliable, and therefore valuable, indicators of atmospheric chemistry, paleoclimate and solar activity on both short (1 yr or less) and long (100,000-1,000,000 yr) time scales. The results also underscore the need for replicate ice cores in the future for both long-term and high-resolution studies. (Auth. mod.)

41-3156
Contribution to the study of sediments in the Bransfield Strait region. [Contribuicão ao estudo dos sedimentos da região estreito de Bransfield (Antártica)],
Silva Martins, L.R., et al, *Pesquisas*, 1987, No.19, p.127-146, In Portuguese with Engiish summary. 19 refs.
Da Rosa Martins, I., Toldo, E.E., Jr., Gruber, N.L.
Ice cores, Ice shelves, Marine deposits, Grounded ice, Glacial deposits, Floating ice, Sedimentation, Flow measurement, Marine geology, Antarctica—Ferraz Station, Antarctica—Bransfield Strait.
Intending to contribute to a better understanding of the glacial and glacio-marine sedimentation near the Brazilian Ferraz Station, surface and core samples from Deep Freeze 82 (USA) and Antarctica IV (Brazil) missions were analyzed. Unsorted deposits produced by the direct action of grounded ice sheet (ortotill) from floating ice and marine currents (paratill), gravity flows (mass flow, debris flow and turbidity currents) are the main deposits occurring along the continental shelf, slope and rise. Biogenic siliceous mud and ooze, laminated terrigenous muds and vulcaniclastic sediments are also important components. (Auth.)

41-3157
Reducing the amount of construction materials needed under conditions of Siberia and the Far East. [Snizhenie materialoemkosti stroitel'stva v usloviiakh Sibiri i Dal'nego Vostoka],
Nesterov, V.V., Leningrad, Strofizdat, 1986, 136p., In Russian with abridged English table of contents enclosed. 29 refs.
Construction materials, Permafrost beneath structures, Prefabrication, Concrete structures, Reinforced concretes, Lightweight concretes, Cost analysis.

41-3158
High-vacuum seal for low temperatures.
Dubovitskiĭ, IU.A., et al, *Instruments and experimental techniques*, July-Aug. 1986 (Pub. Feb. 87), 29(4, pt.2), p.950-951, Translated from Pribory i tekhnika eksperimenta. 6 refs.
Kriukov, A.P.
Low temperature tests, Sealing, Measuring instruments, Low temperature research.

41-3159
Cryostat with 3He-vapor evacuation.
Gershenzon, M.E., et al, *Instruments and experimental techniques*, July-Aug. 1986 (Pub. Feb. 87), 29(4, pt.2), p.979-981, Translated from Pribory i tekhnika eksperimenta. 3 refs.
Zhuravlev, IU.E., Falei, M.I.
Low temperature tests, Equipment, Low temperature research.

41-3160
Nitrogen cryostat for study of Moessbauer scattering.
Goriachev, V.S., et al, *Instruments and experimental techniques*, July-Aug. 1986 (Pub. Feb. 87), 29(4, pt.2), p.981-983, Translated from Pribory i tekhnika eksperimenta. 2 refs.
Novikov, V.M., Romasheva, P.I.
Equipment, Low temperature tests, Low temperature research.

41-3161
Small-volume fog chamber with automatic recording of ice crystals.
Gorbunov, B.Z., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1986, 22(3), p.248-249, Translated from its Izvestiia. Fizika atmosfery i okeana. 3 refs.
Cold chambers, Models, Supercooled fog, Supercooled clouds, Ice formation, Ice crystals, Measuring instruments.

41-3162
Formation kinetics of ice crystals on aerosol particles in supercooled fog. Effect of water vapor exhaustion.
Gorbunov, B.Z., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1986, 22(4), p.333-334, Translated from its Izvestiia. Fizika atmosfery i okeana. 4 refs.
Supercooled fog, Smoke generators, Aerosols, Ice nuclei, Ice formation, Ice crystals, Silver iodite, Particle size distribution, Water vapor.

41-3163
Biogeochemical anomalies in the cryogenesis zone and criteria for their interpretation.
Lobanova, A.B., *Akademiia nauk SSSR. Doklady. Earth science sections*, July-Aug. 1985 (Pub. Mar. 87), 283(4), p.170-172, For Russian original see 40-522. 6 refs.
Geochemistry, Minerals, Exploration, Moraines, Permafrost distribution, Permafrost hydrology, Capillarity, Soil water migration.

41-3164
Operation Deep Freeze 87 end of season report.
U.S. Navy. Naval Support Force, Antarctica, 1987, Var. p.
Research projects, Sea ice, Expeditions, Polar regions, Logistics, Antarctica.
The report of Operation Deep Freeze 87 provides a chronological summary of the activities of naval units supporting the U.S. Antarctic Research Program during the 1986-1987 austral summer season. These activities included providing basic life support requirements of food, shelter, water, heat and medical services to McMurdo residents and the resupply of McMurdo, Amundsen-Scott, Byrd and Palmer stations. Support to Scott Base is also reported. Recommendations are made to improve the capabilities of the forces involved and to improve the preservation of costly personnel and material resources.

41-3165
Antifreeze glycoproteins from polar fish blood.
Feeney, R.E., et al, *Annual review of biophysics and biophysical chemistry*, 1986, Vol.15, p.59-78, 64 refs.
Burcham, T.S., Yeh, Y.
Acclimatization, Ice crystal growth Freezing, Ice crystal size, Frozen liquids, Antifreezes, Cryobiology.
After reviewing pertinent literature the authors find that existing experimental evidence strongly suggests that the mechanism of activity of the antarctic antifreeze glycoprotein (AFGP) molecules is the inhibition of ice growth by competitive adsorption onto the growth sites of ice. The data further suggest the blocking of the formation of large critical nuclei for ice growth. Experiments showing that the longer polymers (AFGP 1-5) have different growth-prevention properties with different types of ice than the shorter polymers (AFGP 6-8) provide additional evidence that crystal size and habits are linked to function. Four main observations have been used in AFGP studies: the ice crystal habit (size) affects the activity; AFGP is on the surface of ice crystals, as shown by surface second harmonic generation (SSHG); the presence of AFGP lowers the surface energy at the ice-solution interface; and kinetic calculations of the inhibition of ice-crystal growth fit adsorption isotherms.

41-3166
Motion and impact of icebergs: development of a model to predict ice mass motions in the vicinity of an offshore structure.
Hay and Company Consultants, Inc., *Environmental Studies Revolving Funds. Report*, Aug. 1986, No.44, 133p., With French summary. Refs. p.119-124.
Ice loads, Icebergs, Offshore structures, Ice mechanics, Impact strength, Drift, Ice volume, Computer applications, Mathematical models, Ocean waves, Ocean currents.

41-3167
Wave growth in scattered sea-ice.
Masson, D., et al, *Environmental Studies Revolving Funds. Report*, Feb. 1987, No.65, International Workshop on Wave Hindcasting and Forecasting, Halifax, N.S., Sep. 23-26, 1986. Proceedings, p.257-266, 15 refs.
Leblond, P.H.
Ocean waves, Ice conditions, Sea ice distribution, Ice models, Mathematical models, Wave propagation, Ice floes, Wind factors.

41-3168
[Proceedings].
Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's Newfoundland, June 1986, St. John's, Memorial University of Newfoundland, [1986], p.852-1036 (Vol.3), Refs. passim. for selected papers see 41-3169 through 41-3173. For vols. 1 and 2 see 40-3830 through 40-3846.
Offshore structures, Ice loads, Marine geology, Engineering, Meetings, Ocean bottom, Ice scoring.

41-3169
Geotechnical engineering offshore, eastern Canada.
Brown, J.D., Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. [Proceedings], St. John's, Memorial University of Newfoundland, [1986], p.852-878, 25 refs.
Offshore structures, Marine geology, Ice scoring, Sedimentation, Engineering, Quaternary deposits, Icebergs, Tides, Canada.

41-3170
Geotechnical design for an arctic mobile offshore drilling unit.
Hewitt, K.J., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. [Proceedings], St. John's, Memorial University of Newfoundland, [1986], p.956-979, 18 refs.
Berzins, W.E.
Offshore drilling, Offshore structures, Foundations, Ice conditions, Design, Soil strength, Ocean bottom, Engineering, Sea ice, Beaufort Sea.

41-3171
Analysis of potential slope instability due to wave loading on the Nova Scotian shelf.
Moran, K., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. [Proceedings], St. John's, Memorial University of Newfoundland, [1986], p.980-999, 15 refs.
Hurlbut, S.E.
Slope stability, Ocean waves, Loads (forces), Ocean bottom, Bottom sediment, Marine geology, Canada—Nova Scotia.

41-3172
Torsional resistance of a single pile in a layered soil.
Hache, R.A.G., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. [Proceedings], St. John's, Memorial University of Newfoundland, [1986], p.1004-1019, 9 refs.
Valsangkar, A.J.
Piles, Soil strength, Ocean bottom, Loads (forces), Torsional strength, Offshore structures, Analysis (mathematics).

41-3173
Iceberg scouring; hazard for seabed development.
Lewis, C.F.M., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. [Proceedings], St. John's, Memorial University of Newfoundland, [1986], p.1020-1021.
Ice scoring, Icebergs, Ocean bottom, Offshore structures, Bottom topography, Damage, Drift, Acoustic measurement.

41-3174
Problems connected with the fluctuation of alpine glaciers in the last 30 yrs. Proceedings. [Problemi connessi con le fluttuazioni dei ghiacciai Alpini nell'ultimo trentennio; atti],
Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983, *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), p.65-214, In Italian with English summary. Refs. passim. For individual papers see 41-3175 through 41-3187.
Glacier surveys, Glacier oscillation, Glaciology, Meetings, Climatic factors, Glacier mass balance, Aerial surveys.

41-3175
Glaciological research: trends and proposals (introduction to the 5th Italian Glaciological Conference). [La ricerca glaciologica: tendenze e proposte (relazione introduttiva al 5 Convegno Glaciologico Italiano)].
Saibene, C., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.68-72, 66 refs., In Italian with English summary.
Glacier surveys, Glacial hydrology, Basal sliding, Climatic factors, Glacier oscillation, Models, Ice structure.

41-3176
Recent variations of glaciers in the Swiss Alps. [Les variations récentes des glaciers des Alpes suisses].
Aellen, M., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.73-82, 7 refs., In French with Italian summary.
Glaciology, Glacier mass balance, Glacier oscillation, Climatic changes, Switzerland—Alps.

41-3177
Could the water redding of Lake Tovel (Trentino, Italy) be related to fluctuations of Alpine glaciers. [Può l'arrossamento del Lago di Tovel (Trentino) essere collegato con le fluttuazioni dei ghiacciai alpini].
Paganelli, A., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.83-88, 38 refs., In Italian with English summary.
Glacier oscillation, Water chemistry, Algae, Glacial lakes, Climatic changes, Plankton, Lake water.

41-3178
Present trend of the glaciers of the Italian Alps. [L'attuale tendenza evolutiva dei ghiacciai delle Alpi italiane].
Zanon, G., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.89-96, 7 refs., In Italian with English summary.
Glacier oscillation, Glacier mass balance, Glaciology, Climatic factors, Glacier surveys, Alpine glaciation, Variations, Italy—Alps.

41-3179
Climatic parameters and glacial fluctuations in the period 1950-1982. [Parametri climatici e variazioni glaciali nel periodo 1950-1982].
Belloni, S., et al, *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.97-123, 14 refs., In Italian with English summary.
Catasta, G., Smiraglia, C.
Glacier oscillation, Glacier tongues, Glacier surfaces, Climatic factors, Analysis (mathematics), Statistical analysis.

41-3180
Glacial and climatic fluctuations during the last century in the Mont Blanc and Monte Rosa groups. [Le variazioni glaciali e climatiche durante l'ultimo secolo nei gruppi del Monte Bianco e del monte Rosa].
Cerutti, A.V., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.124-136, 34 refs., In Italian with English summary.
Glacier oscillation, Climatic changes, Glaciology, Alpine glaciation, France—Mont Blanc, France—Mont Rose.

41-3181
Glaciological investigation on the Vedretta Alta and Vedretta Occidentale di Ries (Alto Adige/South Tyrol). [Indagine glaciologica sulla Vedretta Alta e sulla Vedretta Occidentale di Ries (Alto Adige)].
Secchieri, F., et al, *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.137-143, 5 refs., In Italian with English summary.
Valentini, P.
Glacier surveys, Glacier mass balance, Glacier surfaces, Drill core analysis, Glacier tongues, Italy—Alto Adige.

41-3182
Peat formation of the Rutor Glacier (Aosta Valley). Results obtained by palynostratigraphic study of new peat outcrops near the glacier snout. [La torbiera del Rutor (Valle d'Aosta). Relazione sui risultati conseguiti dallo studio palinostratigrafico di nuovi affioramenti torbosi segnalati alla fronte attuale del ghiacciaio].
Armando, E., et al, *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.144-149, 2 refs., In Italian with English summary.
Charrier, G.
Peat, Glacier tongues, Palynology, Clays, Paleoclimatology, Age determination, Glacier oscillation, Italy—Rutor Glacier.

41-3183
Satellite monitoring of Alpine glacier fluctuations. [Controllo delle fluttuazioni dei ghiacciai alpini mediante telerilevamento da satellite].
Della Ventura, A., et al, *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.150-155, 12 refs., In Italian with English summary.
Rabagliati, R., Rampini, A., Serandrei Barbero, R.
Glacier surveys, Alpine glaciation, Remote sensing, Topographic features, Glacier surfaces, Ice structure, LANDSAT, Snow cover distribution.

41-3184
Problems arising from collection and interpretation of data for a new glacier inventory. [Problematiche relative alla raccolta e all'interpretazione dei dati per un nuovo catasto dei ghiacciai].
Secchieri, F., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.156-165, 16 refs., In Italian with English summary.
Photography, Glacier surveys, Mapping, Snow line, Glaciology, Firn, Aerial surveys, Italy—Alps.

41-3185
Problems and indications for a new inventory of Italian glaciers based on comparison between the Italian Inventory of 1959-62 and the World Glacier Inventory. [Problematiche e indicazioni per un nuovo catasto dei ghiacciai italiani sulla base del confronto fra il Catasto Italiano 1959-62 e il World Glacier Inventory].
Belloni, S., et al, *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.166-181, 5 refs., In Italian with English summary.
Catasta, G., Smiraglia, C.
Glacier surveys, Glaciology, Statistical analysis, Analysis (mathematics), Glacier tongues, Altitude, Italy.

41-3186
Glacier inventory of the province of Bolzano. [Il Catasto dei Ghiacciai della Provincia di Bolzano].
Valentini, P., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.182-195, 13 refs., In Italian with English summary.
Glacier surveys, Glacier oscillation, Aerial surveys, Mapping, Photointerpretation, Climatic changes, Italy—Bolzano.

41-3187
Soviet Glacier Inventory and present glaciation of the Akkem Valley (Altai, Southern Siberia). [Il Catasto dei Ghiacciai Sovietici e il glacialismo attuale della Valle dell'Akkem (Altaj, Siberia Meridionale)].
Smiraglia, C., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(2), Convegno Glaciologico Italiano, 5th, Bolzano-Val Martello, Italy, Sep. 30-Oct. 2, 1983. Proceedings, p.196-204, 10 refs., In Italian with English summary.
Glacier surveys, Glacier ablation, Glacier oscillation, Aerial surveys, Photography, Altitude, Distribution, USSR—Altai Mountains.

41-3188
Pipelines and permafrost—science in a cold climate.
Williams, P.J., Ottawa, Ont., Carleton University Press, 1986, 129p.
DLC TN880.5.W56 1986
Permafrost beneath structures, Pipelines, Frost heave, Climatic factors, Natural resources, Soil freezing, Thaw weakening, Thermokarst, Ground ice, Polar regions.

41-3189
Field measurements of sediment transport on the Scotian shelf. Vol.2. Boundary layer measurements and sand transport prediction.
Hodgins, D.O., et al, *Environmental Studies Revolving Funds. Report*, Aug. 1986, No.41, 114p. + appends., With French summary. 34 refs.
Sayao, O.J.
Sediment transport, Ocean currents, Boundary layer, Acoustic measurement, Sands, Forecasting, Ocean waves.

41-3190
Proceedings. Learning from experience/avoiding failures.
Canadian Building Congress, 4th, Oct. 6-8, 1985, Ottawa, Ont., National Research Council, Canada, 1985, 381p., With French summaries. Refs. passim. For selected papers see 41-3191 through 41-3194.
Buildings, Permafrost beneath structures, Chemical ice prevention, Concrete strength, Meetings, Damage, Road icing, Design, Canada.

41-3191
Unforgiving North.
Chill, R.W.C., et al, Canadian Building Congress, 4th, Oct. 6-8, 1985, Proceedings. Learning from experience/avoiding failures, Ottawa, Ont., National Research Council, Canada, 1985, p.157-164, With French summary.
Latta, J.K.
Permafrost beneath structures, Cold weather construction, Buildings, Foundations, Ventilation, Windows, Condensation, Heat balance, Ground thawing, Settlement (structural), Climatic factors.

41-3192
Parking garage problem.
Litvan, G.G., Canadian Building Congress, 4th, Oct. 6-8, 1985. Proceedings. Learning from experience/avoiding failures, Ottawa, Ont., National Research Council, Canada, 1985, p.214-218, 6 refs., With French summary.
Corrosion, Concrete strength, Chemical ice prevention, Buildings, Maintenance, Reinforced concretes, Damage, Design.

41-3193
Deterioration of parking garages: preventative design.
Tay, D.C.K., Canadian Building Congress, 4th, Oct. 6-8, 1985. Proceedings. Learning from experience/avoiding failures, Ottawa, Ont., National Research Council, Canada, 1985, p.228-237, 13 refs., With French summary.
Concrete strength, Protective coatings, Salting, Frost action, Design, Damage, Countermeasures.

41-3194
Chemical solutions to the chemical problem.
Minsk, L.D., MP 2224, Canadian Building Congress, 4th, Oct. 6-8, 1985. Proceedings. Learning from experience/avoiding failures, Ottawa, Ont., National Research Council, Canada, 1985, p.238-244, 9 refs., With French summary.
Pavements, Corrosion, Concrete strength, Ice melting, Salting, Bridges, Ice control, Road icing, Chemical ice prevention, Antifreezes, Snow removal, Damage, Ice removal, Temperature effects.
The cheapest deicing chemical to procure—salt—is one of the most effective freezing point depressants, but it can also be one of the most costly where material degradation results from electrolytic corrosion. Damage to pavements, primarily bridge decks and elevated highways, and the high cost of repair or rehabilitation, has spurred the search for effective but non-detri-

mental deicing chemicals. The most promising material is calcium magnesium acetate (CMA) which tests made to date have shown to exhibit little or no corrosion potential, under generally-occurring conditions, and to have an acceptable melting action. The nature of salt action on concrete and characteristics for a chemical to serve as an effective deicing agent are reviewed. Also, candidate chemicals other than CMA are discussed. Research to improve chemical control of snow and ice, both underway and proposed, is reviewed, and the outlook for reduced damage to structures is assessed.

41-3195

On the application of lattice statistics to bubble trapping in ice.

Enting, I.G., *Tellus*, Feb.-Apr. 1987, 39B(1-2), p.100-113, 65 refs.

Lattice models, Statistical analysis, Bubbles, Ice sheets.

41-3196

Biospheric CO2 emissions during the past 200 years reconstructed by deconvolution of ice core data.

Siegenthaler, U., et al, *Tellus*, Feb.-Apr. 1987, 39B(1-2), p.140-154, 39 refs.

Oeschger, H.

Ice cores, Ice composition, Carbon dioxide, Antarctica—Siple Station.

Measurements on air trapped in old polar ice from Siple Station have revealed that the pre-industrial atmosphere contained 280 ppm of CO2 and that *delta*C-13 of atmospheric CO2 decreased by about 1.1 per mill until 1980. These measurements show that considerable amounts of non-fossil CO2 must have already been emitted into the atmosphere in the 19th century. Deconvolution of the CO2 record yields a cumulative non-fossil production of about 90 to 150 Gt C until 1980, of which more than 50% were released prior to 1900. According to model results, the net non-fossil production rate was roughly constant in the 19th and the first part of the 20th century. In the past 30 years, smaller values are obtained which are at the lower limit or below current ecological estimates for deforestation and land use. Calculated C-13 and C-14 time histories agree well with the observed changes. While the change of the atmospheric CO2 concentrations reflects more the cumulative carbon release, the isotope concentrations are more sensitive to short-term changes of the emission rate. (Auth. mod.)

41-3197

Underground ice in western Siberia: origin and geological significance.

Grosval'd, M.G., et al, *Polar geography and geology*, Jul-Sep. 1986, 10(3), p.173-183, For Russian original see 40-3921. 17 refs.

Vtiurin, B.I., Sukhodrovskiĭ, V.L., Shishorina, Zh.G.

Ground ice, Ice formation, Cryogenic soils.

41-3198

Maps assessing the potential for the development of technogenic thermokarst in the north of western Siberia.

Parmuzin, S.IU., et al, *Polar geography and geology*, Jul.-Sep. 1986, 10(3), p.184-193, For Russian original see 40-1897. 7 refs.

Shamanova, I.I.

Thermokarst, Maps, Snow depth, Vegetation factors, Permafrost distribution.

41-3199

Changes in geocryological conditions with exploitation of natural forested complexes in the south of central Yakutia.

Stashenko, A.I., *Polar geography and geology*, Jul.-Sep. 1986, 10(3), p.194-199, For Russian original see 40-3312. 8 refs.

Geocryology, Ground thawing, Vegetation factors, Active layer.

41-3200

Geocryological account of the Schirmacher Oasis.

Vtiurin, B.I., *Polar geography and geology*, Jul.-Sep. 1986, 10(3), p.200-212, For Russian original see 40-3645 or E-33892. 16 refs.

Geocryology, Climate, Active layer, Antarctica—Schirmacher Hills.

The active layer in the Schirmacher Hills region was studied in detail from Nov. 1981 to March 1982. In unconsolidated materials the commonest variant of cryogenic structure is a massive subtype with no lenses or layers of ice; a streaky subtype occurs in some fine-grained sediments. Segregation ice is relatively rare and no wedge ice was reported. The only massive ground ice is buried glacier ice near the ice cap margin. Frost shattering is the most widespread and most effective weathering mechanism. Sorted circles, nets and polygons are widespread in the unconsolidated materials and were studied in detail by the author. Sorted stripes occur only rarely. Thermokarst is very poorly developed even where blocks of buried ice were exposed. (Auth.)

41-3201

Area of Antarctica and its ice shelves (on the basis of new cartographic data).

Suetova, I.A., *Polar geography and geology*, Jul.-Sep. 1986, 10(3), p.213-226, For Russian original see 40-3642 or F-33888. 9 refs.

Ice shelves, Ice sheets, Topographic surveys, Antarctica.

The article compares the area of the antarctic ice shelves as presented on earlier maps (1961 and 1964) with that based on the latest available data (1984). The results indicate that despite catastrophic calvings such as those from the Amery, West, Bellingshausen, and Thwaites ice shelves, involving a total of about 20,000 sq km of ice, the total area of the antarctic ice shelves during this 20-year period increased by 135,000 sq km or by 9%. This expansion is largely the product of improvements in plotting the boundaries of the ice shelves, especially their inner boundaries. The latest estimate of the total area of the continent, including ice shelves and islands attached by ice shelves, is 13,980 million sq km. (Auth.)

41-3202

New data on the position of the Bellingshausen Ice Shelf.

[Akovlev, V.N., et al, *Polar geography and geology*, Jul.-Sep. 1986, 10(3), p.227-231, Translation of Vsesoiuznoe geograficheskoe obshchestvo. Izvestiia, 118(3):255-258, 1986. 3 refs.

Kovalev, A.D.

Ice shelves, Ice edge.

The Bellingshausen Ice Shelf was a prominent lobe-shaped tongue which projected from the coast of Antarctica on the Greenwich Meridian. First charted in 1938-39, it was still about the same size in 1949-52, reaching about 69 deg 25'S. But by 1955 it had expanded enormously, reaching a latitude of approximately 69 S, its area north of the 70th parallel was about 5000 sq km. A survey made from the Soviet research vessel *Evrika* in March 1981 revealed that the ice shelf had shrunk drastically, its boundary was observed to be approximately still in the same position during a visit by the Soviet vessel *Vol'nyy veter* in January 1983. (Auth.)

41-3203

***Sevmorput'* is launched.** ["SEVMORPUT'" spushchen na vodu], *Morskoĭ flot*, 1986, No.6, p.24-25, In Russian.

Icebreakers, Nuclear power, Marine transportation.

41-3204

***Tiksi* moves through ice.** ["Tiksi" forsiruet l'dy], Burkov, G., et al, *Morskoĭ flot*, 1986, No.6, p.42-45, In Russian.

Arikainen, A.

Icebreakers, Ice navigation, Ships, Ice cutting, Experimentation, Northern Sea Route.

41-3205

Reinforced concrete for petroleum industry structures of the Arctic Shelf. [Zhelezobetonnye neftegazopromyslovye sooruzheniia dlia arkticheskogo shel'fa], Abadzhian, K.A., *Gazovaia promyshlennost'*, Dec. 1985, No.12, p.32-33, In Russian. 2 refs.

Ice shelves, Concrete structures, Reinforced concretes, Design, Arctic Ocean.

41-3206

Dynamics of freezing and thawing of ground around a cooled gas pipeline. [Dinamika promerzaniia i ottaivaniia grunta v zone okhlazhdaemogo gazoprovoda], Nikonenko, I.S., et al, *Gazovaia promyshlennost'*, Apr. 1986, No.4, p.14-16, In Russian.

Kiselev, M.P.

Gas pipelines, Permafrost beneath structures, Permafrost control, Artificial freezing.

41-3207

Service life of flexible elements subject to freeze-thaw cycles. [Dolgovechnost' izgibaemykh elementov pri tsiklicheskom zamorazhivanii i ottaivaniĭ], Krakovskiĭ, M.B., et al, *Beton i zhelezobeton*, Oct. 1986, No.10, p.19-20, In Russian. 3 refs.

Podval'nyĭ, A.M.

Concrete structures, Reinforced concretes, Freeze thaw cycles, Frost resistance, Elastic properties, Analysis (mathematics).

41-3208

Water in regolith from Mare Crisium (Luna 24)?. [Voda v regolite Moria Krizisov ("Luna-24")?], Akhmanova, M.V., et al, *Geokhimiia*, Feb. 1978, No.2, p.285-288, In Russian. 7 refs.

Dement'ev, B.V., Markov, M.N.

Moon, Water, Infrared spectroscopy, Spectrometers, Planetary environments, Rocks, Minerals.

41-3209

Regime of soil-ground waters and runoff in forests and swamps of the Yenisey River area of western Siberia. [Rezhim pochvenno-gruntovykh vod i stoka v lesakh i bolotakh prieniseĭskoĭ chasti Zapadnoĭ Sibiri], Konstantinov, V.D., *Lesovedenie*, Mar.-Apr. 1986, No.2, p.14-22, In Russian with English summary. 22 refs.

River basins, Taiga, Cryogenic soils, Snow surveys, Snow cover distribution, Snow water equivalent, Soil temperature.

41-3210

Changes in chemical composition of meltwater in areas of intensive human activities. [Osobennosti izmeneniia khimicheskogo sostava talykh vod ratona intensivnoĭ antropogennoĭ deiatel'nosti],

Dvornikova, L.I., et al, *Leningrad. Universitet. Vestnik. Ser 7*, Mar. 1986, No.2, p.60-68, In Russian. 3 refs.

Baeva, R.I., Gorbovskaia, A.D., Seliverstov, IU.P.

Snow depth, Human factors, Snow cover distribution, Snow composition, Snow water equivalent, Meltwater, Water pollution, Topographic effects, Chemical composition.

41-3211

Using satellite survey data for studying mass transfer in glacial systems. [Ispol'zovanie materialov kosmicheskoĭ s"emki dlia izucheniia massoobmena lednikovykh sistem],

Nosenko, G.A., *Geodeziia i kartografiia*, May 1986, No.5, p.26-31, In Russian. 5 refs.

Spaceborne photography, Glaciation, Mountain glaciers, Photointerpretation, Slope processes, Glacier ice, Ice volume, Mass transfer, Glacial runoff.

41-3212

Evaluating the state of gas pipelines from space photographs. [Ob ispol'zovanii aerokosmicheskikh snimkov dlia otsenki sostoianiia gazoprovodov],

Arefeva, E.M., et al, *Geodeziia i kartografiia*, Aug. 1986, No.8, p.27-29, In Russian. 3 refs.

Petelin, IU.N., Khrenov, N.N.

Spaceborne photography, Gas pipelines, Permafrost beneath structures, Swamps, Landscape types.

41-3213

Regionalization of the Yakut ASSR for determining depths of placing geodetic markers. [Voprosy rafonirovaniia territorii IAkutskoĭ ASSR dlia opredeleniia glubiny zakladki geodezicheskikh znakov],

Bogdanov, B.G., *Geodeziia i kartografiia*, Jul. 1986, No.7, p.30-31, In Russian. 3 refs.

Geodetic surveys, Bench marks, Mapping, Permafrost distribution, Active layer, Charts, Continuous permafrost.

41-3214

Toward improvement of the scientific-technical level of foundation construction on permafrost soils.

Fedorovich, D.I., et al, *Soil mechanics and foundation engineering*, Jul.-Aug. 1986 (Pub. Jan. 87), 23(4), p.144-146, Translated from Osnovaniia, fundamenty i mekhanika gruntov, No.4, 1986.

Targulian, IU.O.

Building codes, Foundations, Permafrost beneath structures.

41-3215

Damage mechanism of cyclic freezing-thawing in sulfur concrete.

Cohen, M.D., *Cement and concrete research*, Mar. 1987, 17(2), p.357-360, 5 refs.

Concretes, Freeze thaw tests, Frost resistance.

41-3216

New horizontal gradient, continuous flow, ice thermal diffusion chamber.

Tomlinson, E.M., et al, *Journal of atmospheric and oceanic technology*, Dec. 1985, 2(4), p.448-467, 37 refs.

Fukuta, N.

Cold chambers, Thermal diffusion, Ice nuclei, Heterogeneous nucleation.

41-3217

Technique for measuring the rotational properties of falling oblate ice spheroids.

Battan, L.J., *Journal of atmospheric and oceanic technology*, Dec. 1985, 2(4), p.665-666, 11 refs.

Hailstones, Falling bodies, Radar tracking.

41-3218

Classification of ambiguous ice particle shadowgraphs by consensus.

Dyer, R.M., et al, *Journal of atmospheric and oceanic technology*, Dec. 1985, 2(4), p.675-679, 2 refs.

Glass, M., Hunter, H.E.

Ice crystals, Snowflakes, Classifications.

41-3219

Vertical wind tunnel for snow process studies.

Takahashi, T., et al, *Journal of atmospheric and oceanic technology*, Mar. 1986, 3(1), p.182-185, 12 refs.

Wind tunnels, Snowfall, Ice crystals, Snowflakes.

41-3220
Thermal device for aircraft measurement of the solid water content of clouds.
King, W.D., et al, *Journal of atmospheric and oceanic technology*, Sep. 1986, 3(3), p.356-362, 10 refs.
Turvey, D.E.
Cloud physics, Water content, Ice crystals, Measuring instruments, Wind tunnels.

41-3221
Air flow and particle trajectories around aircraft fuselages. IV: orientation of ice crystals.
King, W.D., *Journal of atmospheric and oceanic technology*, Sep. 1986, 3(3), p.433-439, 11 refs.
Ice crystals, Air flow, Orientation.

41-3222
Replication of ice crystals using Formvar: techniques and precautions.
Griggs, D.J., et al, *Journal of atmospheric and oceanic technology*, Sep. 1986, 3(3), p.547-551, 9 refs.
Jayaratne, E.R.
Ice crystal replicas.

41-3223
Ice engineering for rivers and lakes bibliography.
Wortley, C.A., Madison, University of Wisconsin, College of Engineering, 1987, 117p.
River ice, Lake ice, Ice physics, Bibliographies, Engineering, Ice loads, Ice roads, Offshore structures, Hydraulics, Ports.

41-3224
Engineering geology of the Government Hill area, Anchorage, Alaska.
Updike, R.G., et al, *U.S. Geological Survey. Bulletin*, 1986, No.1588, 32p., 45 refs.
Carpenter, B.A.
Engineering geology, Sediments, Landslides, Seismic surveys, Pleistocene, Quaternary deposits, Ports, Railroads, Marine deposits, Particle size distribution, Earthquakes, United States—Alaska—Anchorage.

41-3225
Design of an iceberg scour repetitive mapping network for the Canadian East Coast.
Lewis, C.F.M., *Environmental Studies Revolving Funds. Report*, Mar. 1987, No.43, 45p. + maps, With French summary. 29 refs.
Ice scoring, Icebergs, Marine geology, Ocean bottom, Mapping, Measuring instruments, Design.

41-3226
Close range ice hazard detection: Phase 2.
De Heering, P., et al, *Transport Canada. Report*, Jan. 31, 1987, TP-8186-E, 67p. + appends. (2 vols.), With French summary. Refs. p.65-67.
Sutcliffe, P.
Echo sounding, Ice navigation, Ice detection, Icebergs, Acoustic measurement, Ice breaking, Marine transportation, Ice conditions, Sound transmission.

41-3227
Velocity and surface altitude of the lower part of Hubbard Glacier, Alaska, August 1978.
Krimmel, R.M., et al, *U.S. Geological Survey. Open-file report*, 1986, No.86-549, 13p., 3 refs.
Sikonia, W.G.
Glacier flow, Glacier surfaces, Altitude, Velocity, Photogrammetry, Aerial surveys, United States—Alaska—Hubbard Glacier.

41-3228
Application of time-domaine reflectometry to determine the thickness of the frozen zone in soils.
Baker, T.H.W., et al, *National Research Council, Canada. Division of Building Research. DRR paper*, [1982], No.1215, 8p., With French summary. 6 refs. Presented at the 3rd International Symposium on Ground Freezing, Hanover, NH, June 21-24, 1982. For abstract see 37-3055.
Davis, J.L.
Soil freezing, Frost penetration, Electromagnetic prospecting, Grain size, Dielectric properties, X ray analysis, Tests.

41-3229
HF (high frequency) over-the-horizon mapping of the Greenland icecap.
Sales, G.S., Propagation factors affecting remote sensing by radio waves, Rome Air Development Center, Hanscom AFB, MA, Electromagnetic Sciences Division, Aug. 1983, p.(11)1-(11)12. ADA-137 559.
Ice cover thickness, Remote sensing, Mapping, Radar echoes, Sounding, Statistical analysis, Backscattering, Greenland.

41-3230
Icebreakers and icebreaking. 1974-January 1984 (Citations from Oceanic Abstracts). Springfield, VA, National Technical Information Service, Mar. 1984, 129p. PB84-861 590.
Icebreakers, Ice breaking, Bibliographies, Ice formation, Ice navigation, Design, Safety.

41-3231
Rotorcraft icing technology—an update.
Ward, R., et al, Conference on Flight Mechanics and System Design Lessons from Operational Experience, Athens, Greece, May 10-13, 1983. Proceedings, Army Aviation Engineering Flight Activity, Edwards AFB, CA, Oct. 1983, p.(8)1-(8)15. ADA-137 607.
Chambers, H.W.
Aircraft icing, Ice removal, Helicopters, Propellers, Ice formation, Countermeasures, Tests, Loads (forces), Damage.

41-3232
Proceedings.
Arctic Heritage Symposium, Banff, Alberta, August 24-28, 1985, Ottawa, Association of Canadian Universities for Northern Studies, 1987, 653p., Refs. passim. For selected papers see 41-3233 through 41-3237.
Nelson, J.G., ed, Needham, R., ed, Norton, L., ed.
Landforms, Ocean environments, Vegetation, Limnology, Polar regions, Oil spills, Ice conditions, Snow cover effect, Ice cover effect, Meetings, Periglacial processes, Tundra.

41-3233
Marine processes.
Baker, J.M., et al, Arctic Heritage Symposium, Banff, Alta., Aug. 24-28, 1985. Proceedings. Edited by J.G. Nelson, R. Needham and L. Horton, Ottawa, Association of Canadian Universities for Northern Studies, 1987, p.50-74, Refs. p.70-74.
Angel, M.V.
Ocean environments, Oil spills, Ice conditions, Bottom sediment, Marine biology, Ocean bottom, Arctic Ocean.

41-3234
Arctic landforms: the formative processes.
Bird, J.B., Arctic Heritage Symposium, Banff, Alta., Aug. 24-28, 1985. Proceedings. Edited by J.G. Nelson, R. Needham and L. Horton, Ottawa, Association of Canadian Universities for Northern Studies, 1987, p.75-79, 7 refs.
Periglacial processes, Landforms, Geomorphology, Freeze thaw cycles, Frost weathering, Permafrost, Ground ice, Polar regions.

41-3235
Floral processes.
Wielgolaski, F.E., Arctic Heritage Symposium, Banff, Alta., Aug. 24-28, 1985. Proceedings. Edited by J.G. Nelson, R. Needham and L. Horton, Ottawa, Association of Canadian Universities for Northern Studies, 1987, p.80-94, 22 refs.
Vegetation, Tundra, Plant physiology, Biomass, Climatic factors, Polar regions.

41-3236
Northern limnological processes: research and management.
Adams, W.P., Arctic Heritage Symposium, Banff, Alta., Aug. 24-28, 1985. Proceedings. Edited by J.G. Nelson, R. Needham and L. Horton, Ottawa, Association of Canadian Universities for Northern Studies, 1987, p.112-146, Refs. p.139-146.
Limnology, Lake ice, Lake water, Ice cover effect, Snow cover effect, Polar regions, Water temperature, Ice cover thickness, Light transmission.

41-3237
Natural realm in the Arctic: a critique from a developmental perspective.
French, H.M., Arctic Heritage Symposium, Banff, Alta., Aug. 24-28, 1985. Proceedings. Edited by J.G. Nelson, R. Needham and L. Horton, Ottawa, Association of Canadian Universities for Northern Studies, 1987, p.154-163, 20 refs.
Frost heave, Permafrost, Thermal regime, Environmental impact, Engineering, Thermokarst, Surface properties, Polar regions, Canada.

41-3238
Temperature variation of the thermal properties of ice.
Osterkamp, T.E., et al, *Alaska. University. Geophysical Institute. [Report]*, Feb. 1987, No.309, 10p. + figs., 16 refs.
Walker, G.G.
Ice thermal properties, Ice physics, Temperature variations, Analysis (mathematics).

41-3239
Measurement of water temperature during frazil ice formation.
Williams, G.P., *National Research Council, Canada. Division of Building Research. Building research note*, Oct. 1984, No.212, 7p.
Water temperature, Ice formation, Frazil ice, Heat loss.

41-3240
Law observed in the generation of sound in ice samples subjected to loading.
Mitiaev, P.V., et al, *Soviet physics. Acoustics*, Mar.-Apr. 1986, 32(2), p.168-169, Translated from Akusticheskiĭ zhurnal. 5 refs.
Tokmagambetov, G.A.
Ice sampling, Tests, Loads (forces), Deformation, Fracturing, Sound waves, Measuring instruments.

41-3241
Non-steady-state heat exchange of linear underground constructions with a thawing (freezing) soil.
Gokhman, M.R., *Journal of engineering physics*, July 1986 (pub. Jan. 87), 51(1), p.781-785, Translated from Inzhenerno-fizicheskiĭ zhurnal. 10 refs.
Foundations, Stefan problem, Subgrade soils, Freeze thaw cycles, Temperature distribution, Heat transfer, Mathematical models.

41-3242
Dynamics of ice-rock barriers under conditions of freezing of filtering rocks.
Chugunov, V.A., et al, *Journal of engineering physics*, Aug. 1986 (pub. Feb. 87), 51(2), p.981-986, Translated from Inzhenerno-fizicheskiĭ zhurnal. 11 refs.
Kornev, K.G.
Soil freezing, Artificial freezing, Frost penetration, Boreholes, Soil water migration, Frozen rock temperature, Mathematical models.

41-3243
Collection of case histories of avalanche accidents.
Chris Stethem and Associates, Ltd., Canada, Division of Supply and Services, DSS file No. 07SX.31944-3-0031, Mar. 1984, var.p., Unpublished manuscript.
Avalanche deposits, Accidents, Rescue operations, Avalanche formation.

41-3244
Indexer: a device for measuring the resistance of ice models in a test channel. [Indexer: dispositif de mesure de la résistance d'une glace modèle en bassin des carènes],
Baker, D.N., *Transport Canada. Development*, June 1986, TP 7947F, 15p., In French with English summary.
Ice strength, Ice mechanics, Ice models, Channels (waterways), Flexural strength, Design, Ice cracks, Shear strength, Measuring instruments.

41-3245
Probabilities of ice, wind and temperature loads on electrical transmission lines. [Veroiatnosti gololedno-vetrovykh i temperaturnykh vozdeĭstviĭ na LEP],
Gartsman, L.B., Leningrad, Gidrometeoizdat, 1987, 200p., In Russian with abridged English table of contents enclosed. 136 refs.
Transmission lines, Power line icing, Hoarfrost, Ice loads, Mathematical models, Meteorological factors, Statistical analysis.

41-3246
Hydrothermal regime of taiga and tundra soils of northeastern Europe. [Gidrotermicheskiĭ rezhim taezi nykh i tundrovykh pochv evropeĭskogo Severo-Vostoka],
Kononenko, A.V., Leningrad, Nauka, 1986, 145p. + inserts, In Russian with English table of contents enclosed. Refs. p.139-144.
Tundra, Vegetation, Taiga, Biomass, Cryogenic soils, Hydrothermal processes, Soil temperature, Water balance, Heat balance.

41-3247
Geophysics and man-induced changes of landscapes in the Chukotskiy Peninsula. [Geofizika i antropogennye izmeneniia landshaftov Chukotki],
Ignatenko, I.V., et al, Moscow, Nauka, 1987, 271p., In Russian with English table of contents enclosed. Refs. p.258-271.
Tundra, Cryogenic soils, Permafrost distribution, Soil structure, Soil temperature, Permafrost origin, Soil erosion, Landscape types, Heat balance, Mass transfer, Water balance, Climatic factors.

41-3248
Paleoclimatic constraints on the maintenance of possible ice-shelf cover in the Norwegian and Greenland seas.
Lindstrom, D.R., et al, *Paleoceanography*, Sep. 1986, 1(3), p.313-337, 43 refs.
MacAyeal, D.R.
Ice shelves, Ice models, Paleoclimatology.
The controversial issue of whether or not an integrated ice shelf existed in the Norwegian and Greenland seas during glacial events of the Pleistocene is examined. The method consists of testing for equilibrium ice shelf configurations with the use of a finite element model that predicts ice shelf evolution under a variety of atmospheric and oceanic forcing conditions. Ice flow at the margins of the simulated hypothetical ice shelf is determined from a reconstruction of continental glaciation applicable to the last glacial maximum. Results suggest that the existence of the ice shelf, and possibly surrounding marine-based ice sheets, depends most sensitively on oceanic heat flux. A heat flux of approximately 4.80 J sq m s is near the upper limit allowing ice shelf equilibrium. Greater heat flux causes an initial 450-m-thick ice shelf to collapse rapidly. The equilibrium ice shelf configurations examined provide effective buttressing support for the marine ice sheet grounded in the Barents Sea 18 kyr B.P. At various places throughout the essay, the model is compared to similarities occurring in antarctic ice sheets. An appendix contains an exposition of the full range of these similarities. (Auth. mod.)

41-3249
Physics, chemistry and mechanics of frozen rocks. [Fiziko-khimiia i mekhanika merzlykh porod],
Ershov, E.D., Moscow, Universitet, 1986, 333p., In Russian with abridged English table of contents enclosed. 35 refs.
Soil freezing, Frozen rocks, Frost penetration, Soil water migration, Ice formation, Ice physics, Thermodynamic properties, Hydrothermal processes, Permafrost origin, Cryogenic structures, Cryogenic textures, Frozen fines, Frozen ground chemistry, Frozen ground mechanics.

41-3250
Ice Island underfoot. [Pod nogami ostrov ledianoi],
Chilingarov, A., et al, Leningrad, Gidrometeoizdat, 1986, 175p., 2nd revised and enlarged edition. In Russian. For 1st ed. see 29-3221.
Evseev, M., Sarukhanian, E.
Glaciology, Ice islands, Ice physics, Meteorology, Drift stations, Logistics, Oceanography, Shelters, Heating, Ice cracks, Pressure ridges, Stresses, Research projects, Strains.

41-3251
Lidar-radiometric method for determining the ice water content of cirrus clouds.
Zhuravleva, V.A., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1986, 22(1), p.32-38, Translated from its Izvestiia. Fizika atmosfery i okeana. 17 refs.
Kostko, O.K.
Cloud physics, Supercooled clouds, Radiometry.

41-3252
Dunes in Victoria Valley, Victoria Land: a report on eolian formation in extremely cold climates. [Dünen im Victoria Valley, Victoria-Land, Antarktis: ein Beitrag zur äolischen Formung im extrem kalten Klima],
Miotke, F.-D., *Polarforschung*, 1985, 55(2), p.79-125, In German with English summary and figure captions. 54 refs.
Sands, Eolian soils, Freeze thaw cycles, Wind velocity, Heat balance, Soil water, Antarctica—Victoria Land.
The special conditions for eolian processes forming dunes in extreme polar regions are discussed in comparison to other climatic zones. Sand movements directly on the surface of the dune relief and sand drift within the air above ground are determined at different wind velocities. Additionally, migration of dune ridges in relation to wind velocities was measured during the summer. The results of these studies show that by far, most sand is transported within the dunes. Locally, snow included within sand strata moistens the sand when thawed and cements it when refrozen. The large amounts of heat energy required for melting and evaporation restrict the release of sand grains so that despite high wind velocities sand migration is often minimal. Therefore, the heat balance within the upper decimeter of dune sands determines the eolic erosion rates. During the antarctic winter sand can only be blown away where it is already dry and therefore movable. Consequently, the strong winterly west winds can only moderately modify the dune relief which was formed by prevailing east winds during the summer. (Auth. mod.)

41-3253
Ice thickness data, winter 1979-1980. Environment Canada, Atmospheric Environment Service, Ice Climatology and Applications Division, Apr. 30, 1987, 43p., In English and French.
Ice cover thickness, Freezeup, Ice breaking, Snow depth, Winter, Sea ice, Canada.

41-3254
Potential flow analysis of glaze ice accretions on an airfoil.
Zaguli, R.J., *U.S. National Aeronautics and Space Administration. Contractor report*, Jan. 1984, NASA-CR-168282, 87p. N84-16146/2.
Aircraft icing, Ice accretion, Fluid dynamics, Boundary layer, Pressure, Glaze, Tests.

41-3255
Results of an experimental program investigating the effects of simulated ice on the performance of the NACA 63A415 airfoil with flap.
Zaguli, R.J., et al, *U.S. National Aeronautics and Space Administration. Contractor report*, Jan. 1984, NASA-CR-168288, 183p. N84-16145/4.
Bragg, M.B., Gregorek, G.M.
Aircraft icing, Navigation, Ice accretion, Air flow, Glaze, Ice formation, Pressure, Wind tunnels, Tests.

41-3256
Remote sensing and hydrologic models.
Peck, E.L., et al, *U.S. National Aeronautics and Space Administration. Contractor report*, Mar. 1982, NASA-CR-173232, 179p. N84-16628/9.
Remote sensing, Permafrost hydrology, Snow cover effect, Soil water, Drainage, Models.

41-3257
Development of a frazil ice sampler.
Brockett, B.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, SR 86-37, 12p. ADA-179 043.
Sellmann, P.V.
Frazil ice, Core samplers, Ice sampling, Design, Grain size.
A lightweight sampler has been constructed to provide large cores from frazil ice deposits. Samples containing frazil ice particles ranging in size from 1 mm to over 70 mm, including the interstitial water, were successfully recovered during field tests. These samples were nearly undisturbed while confined in the sample tube, based on a comparison with samples acquired using a freeze probe technique.

41-3258
Freeze-thaw test to determine the frost susceptibility of soils.
Chamberlain, E.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Jan. 1987, SR 87-1, 90p., ADA-180 000, 7 refs.
Freeze thaw tests, Pavements, Frost heave, Frost resistance, Airports, Soil freezing, Thaw weakening, Aircraft landing areas.
A new freezing test for determining the frost susceptibility of soils is presented to supplant the standard CRREL freezing test currently specified by the Corps of Engineers. This test reduces the time required to determine the frost susceptibility of a soil in half. It also allows for the determination of both the frost heave and thaw weakening susceptibilities and considers the effects of freeze-thaw cycling. The new freezing test eliminates much of the variability in test results caused by the human element by completely automating the temperature control and data observations.

41-3259
Urban planning and construction problems in Siberia. [Problemy gradostroitel'stva v Sibiri],
Krushlinskiĭ, V.I., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1986, No.11, p.40-45, In Russian. 4 refs.
Urban planning, Buildings, Roads, Transportation, Permafrost beneath structures, Landscape types, Permafrost distribution, Environmental impact.

41-3260
Calculating the non-erosive velocity of a stream for sandy ground in freezing weather. [K raschetu nerazmyvaiushchei skorosti potoka v zimnikh usloviiakh dlia peschanykh gruntov],
Skrebkov, G.P., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1986, No.11, p.74-77, In Russian. 5 refs.
Korotkov, V.E.
Hydraulic structures, Channels (waterways), Erosion, Earthwork, Ice cover effect, Cold weather construction, Design, Analysis (mathematics).

41-3261
Structural basis of snow-retention efficiency of forest strips. [Obosnovanie ratsional'nykh konstruktsiĭ snegozashchitnykh lesopolos],
Kolomiets, V.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1986, No.11, p.94-97, In Russian. 6 refs.
Snow retention, Forest strips, Snowdrifts, Snow accumulation, Roads.

41-3262
Studies of the role of processes of ocean-atmosphere interaction in climatic changes of the Northern Hemisphere. [Issledovanie roli protsessov vzaimodeĭstviia atmosfery i okeana v izmenchivosti klimata severnogo polushariia],
Nikolaev, IU.V., ed, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.406, 163p., In Russian. For selected papers see 41-3263 through 41-3267. Refs. passim.
Nagurnyĭ, A.P., ed.
Oceanographic ships, Sea ice distribution, Drift, Ice navigation, Ice edge, Icebreakers, Ice water interface, Heat transfer, Measuring instruments.

41-3263
Results of modeling high latitude climates. [Nekotorye rezul'taty modelirovaniia klimata vysokikh shirot],
Nagurnyĭ, A.P., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.406, p.21-32, In Russian. 20 refs.
Ice conditions, Sea ice distribution, Atmospheric circulation, Ice water interface, Heat transfer, Ice cover thickness, Sea ice distribution, Drift, Mathematical models, Arctic Ocean.

41-3264
Studies of ice-edge zones of Arctic seas. [K probleme izucheniia prikromochnykh zon Arkticheskikh morei],
Nikolaev, IU.V., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.406, p.131-138, In Russian. 17 refs.
Makshtas, A.P., Ivanov, B.V.
Models, Ice edge, Sea ice distribution, Fast ice, Ocean currents, Ice water interface, Ice surveys, Heat transfer, Ice cover thickness, Ice reporting.

41-3265
Evaluating parameters of atmospheric surface layer above sea ice, observed from a moving ship. [Ob otsenke parametrov prilednogo sloia atmosfery po nabliudeniiam s dvizhushchegosia sudna],
Makshtas, A.P., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.406, p.139-145, In Russian. 11 refs.
Bogorodskiĭ, P.V., Ivanov, B.V.
Turbulent exchange, Sea ice distribution, Ice air interface, Air water interactions, Ice surveys, Ice formation, Ice deterioration, Heat transfer, Mathematical models.

41-3266
Parametrization of the structure of the active sea layer in the ice-edge zone. [Opyt parametrizatsii struktury deiatel'nogo sloia moria v prikromochnoĭ zone],
Ivanov, B.V., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.406, p.146-150, In Russian. 4 refs.
Shutilin, S.V.
Drift, Ice edge, Ice water interface, Water temperature, Sea ice distribution, Salinity, Subglacial observations, Analysis (mathematics).

41-3267
Characteristics of atmospheric and hydrophysical processes in Fram Strait during fall and winter. [Nekotorye osobennosti atmosfernykh i gidrofizicheskikh protsessov v prolive Frama v osenne-zimniĭ period],
Bogorodskiĭ, P.V., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1986, Vol.406, p.151-157, In Russian. 8 refs.
Ivanov, B.V., Makshtas, A.P.
Sea ice, Oceanographic ships, Drift, Icebreakers, Ice edge, Ice navigation, Air water interactions, Ice water interface, Heat transfer, Measuring instruments.

41-3268
Thermal regime and the stress-strain state of a concrete dam, built of rolled concrete, under severe climatic conditions. [Termicheskiĭ rezhim i napriazhenno-deformirovannoe sostoianie betonnoĭ plotiny iz ukatannogo betona v usloviiakh surovogo klimata],
Epifanov, A.P., et al, *Energeticheskoe stroitel'stvo*, Mar. 1987, No.3, p.35-37, In Russian. 1 ref.
Idel'son, V.B., Sil'nitskiĭ, V.I.
Hydraulic structures, Concrete structures, Dams, Permafrost beneath structures, Thermal stresses.

41-3269

Forecasting ground temperature during adfreezing of piles. (Prognoz temperatur grunta pri vmerzanii svai).

Pylaev, E.L., et al, *Energeticheskoe stroitel'stvo*, Mar 1987, No.3, p.73-75, In Russian. 4 refs.

Orzhekhovskii, I.U.R., Zaitseva, E.I.

Foundations, Piles, Drilling, Frozen ground, Pile driving, Soil freezing.

41-3270

Theory of cryogenic and glaciogenic hydrochemical processes. (Teoriia kriogennykh i gliatsiogennykh gidrokhimicheskikh protsessov).

Ivanov, A.V., *Itogi nauki i tekhniki. Seriia gliatsiologiia*, 1987, Vol.5, 236p., In Russian with English table of contents enclosed. 749 refs.

Kapitsa, A.P., ed.

Glaciology, Snow composition, Geocryology, Snow physics, Land ice, Mathematical models, Hydrology, Extraterrestrial ice, Glaciers, Ice shelves, Icebergs, Mountain glaciers, Glacial hydrology, Ice physics, Chemical composition.

41-3271

Dynamics of the West Antarctic Ice Sheet.

Van der Veen, C.J., ed, Dordrecht, D. Reidel, 1987, 368p., Refs. passim. For individual papers see 41-3272 through 41-3287, or F-35500, F-35502 through F-35515 and J-35501.

Oerlemans, J., ed.

Meetings, Ice sheets, Climatic changes, Antarctica—West Antarctica.

The book contains the proceedings of a workshop on the dynamics of the West Antarctic Ice Sheet, held in Utrecht May 6-8, 1985, providing an up-to-date overview of current research and problems encountered in assessing the reaction of West Antarctica to climatic warming. Topics include the oceanic circulation near ice shelves, mathematical models of ice-shelf flow, the ice shelf-inland ice interaction, and the flow of subglacial water. In addition, a number of papers are included which present results and interpretations of recent observations.

41-3272

West Antarctic Ice Sheet: the need to understand its dynamics.

Van der Veen, C.J., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.1-16, Refs. p.14-16.

Ice sheets, Climatic changes, Ice bottom surface, Ice surface, Ice shelves, Antarctica—West Antarctica.

As a general introduction to the environment of West Antarctica, some of the problems are highlighted which relate to possible responses of the West Antarctic Ice Sheet to climatic warming. Included are a short description of Antarctica, with a map showing its main geographic features, illustrations of the current antarctic surface elevation contours, the bedrock topography and the bedrock after isostatic rebound, discussion of the fringing ice shelves hypothesis, with sketches of a marine ice sheet showing the processes that control the flow of ice from the inland parts to the sea and the disintegration of West Antarctica caused by ice-shelf thinning, and a review of the antarctic climate and of the literature dealing with the antarctic oceanic subshelf circulation.

41-3273

On the oceanic circulation near a shelf-ice edge.

Van Heijst, G.J.F., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.37-56, 18 refs.

Ice edge, Ice melting, Sea ice, Ice cover effect, Ice shelves.

This paper addresses the oceanic circulation near the shelf-ice edge, and concentrates on two aspects, namely the large-scale flow driven by wind stresses in the open sea, and the smaller-scale circulation driven by melting of the ice wall. Contrary to the expectation that (fresh) meltwater rises in a saline fluid environment, it is found that the latter simple flow pattern is destroyed by the presence of a salinity gradient in the ambient fluid.

41-3274

Quantitative estimates of the mass flux and ice movement along the ice edges in the eastern and southern Weddell Sea.

Lange, M.A., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.57-74, 14 refs.

Ice edge, Icebergs, Ice volume, Mass balance, Sea ice distribution, Calving, Ice shelves, Antarctica—Ronne Ice Shelf, Antarctica—Brunt Ice Shelf, Antarctica—Weddell Sea, Antarctica—Filchner Ice Shelf.

Data on the positions of ice edges in the eastern and southern Weddell Sea for the years 1980 to 1984 are presented. The apparent areal growth of individual ice shelves in the Weddell Sea region are also assessed. Together with estimates of near-ice-edge ice thicknesses, an apparent annual discharge rate is computed. Results for the Filchner-Ronne and the Brunt ice shelves amount to apparent calving rates which, in the case of the Filchner-Ronne Ice Shelf, is lower than previous estimates. Most of the major ice shelves in the Weddell Sea region show steadily advancing ice fronts during the period of observation. This has the consequence that the source region for icebergs during this time should be limited mainly to ice fronts in the eastern Weddell Sea. The present results support earlier contentions that large ice shelves undergo episodic, major calving events with frequencies well in excess of a few years, while smaller ice shelves are subject to more frequent calving, thus keeping the ice fronts close to equilibrium. (Auth. mod.)

41-3275

Some aspects of the flow of the Ronne Ice Shelf.

Doake, C.S.M., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.75-98, 23 refs.

Ice creep, Ice shelves, Shear stress, Mapping, Ice deformation, Rheology, Mass balance, Ice melting, Streams, Antarctica—Ronne Ice Shelf.

A new ice-thickness map has been compiled for the Ronne Ice Shelf north of 81°S. Comprehensive cover was obtained during the 1982/83 season with flight lines at approximately 50 km spacing. The major features described previously are confirmed, but additional information over the western half of the ice shelf, where there were few data before, has revealed the strong identity of individual ice streams. Individual features on radio-echo records, such as abrupt changes in echo strength or prominent bottom crevasses, allow flowlines to be drawn over the western part of the ice shelf. These correspond well with surface features seen on Landsat images. (Auth. mod.)

41-3276

Unconfined ice-shelf flow.

Morland, L.W., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.99-116, 4 refs.

Rheology, Thickness, Ice shelves, Stresses, Ice temperature, Velocity measurement, Ice creep, Ice models.

The spreading of an unconfined ice shelf in two horizontal directions involves the variation of the two horizontal velocity components and the thickness in both directions. Exploiting the slow variation of physical quantities in both horizontal directions compared to vertical variation allows simple solution of the vertical momentum balance and the derivation of plane stress equilibrium equations for integrals of the horizontal stresses through the thickness, together with integrated traction conditions on a front contour defining the boundary of smooth flow. This is the basis of a companion paper (see 41-3277 or F-35505) which treats both plane and axi-symmetric flow. (Auth. mod.)

41-3277

Plane and radial ice-shelf flow with prescribed temperature profile.

Morland, L.W., et al, Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.117-140, 12 refs.

Zainuddin, R.

Rheology, Ice creep, Ice shelves, Ice cover thickness, Ice models, Ice temperature, Velocity measurement.

The longitudinal velocity and thickness of an ice shelf in steady plane flow, when temperature is prescribed as a function of the spatial coordinates, are determined by simultaneous integro-differential equations. These are solved numerically to illustrate the effects of temperature distribution, depth and ice flux at the grounding line, and surface accumulation. The corresponding integro-differential equations for axi-symmetric flow are derived, which involves a strain rate transverse to the radial direction and hence non-planar spreading. Numerical solutions for a grounding line at a mean antarctic radius and a range of ice-flux values are presented. Comparisons with corresponding plane-flow solutions indicate that radial spreading has little influence. (Auth. mod.)

41-3278

Ice-shelf backpressure: form drag versus dynamic drag.

MacAyeal, D.R., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.141-160, Refs. p.158-160.

Mapping, Ice models, Mass balance, Ice creep, Ice shelves, Stresses, Rheology, Antarctica—Ross Ice Shelf.

The inadequacy resulting from the action of glaciostatic stresses distributed around the margins of an ice shelf leads to a reaction force, termed *form drag*, at the grounding line of an ice stream. The stress regime at the sounding line of the West Antarctic Ice Sheet is examined in terms of *form drag* and *dynamic drag*, the latter of which arises purely due to ice-shelf motion and viscous coupling at the ice-shelf shear margins. Finite-element simulations of the Ross Ice Shelf discussed here show that *form drag* dominates *dynamic drag* at the grounding line of ice streams B and C. As a demonstration of the consequence of this dominance, the future evolution of the Ross Ice Shelf, and of the stress regime at the grounding line of ice streams B and C are simulated to assess the response to impulsive removal of the Crary Ice Rise. This simulation shows that the forces restraining Ice Stream B do not change by a significant amount even after 1000 years of simulated adjustment. The forces restraining Ice Stream C, however, reduce by 40% over the 1000 year period, with an initial 25% change occurring within the first 250 years. This contrast between ice streams B and C is attributed to the dominance of *form drag*, its dependence on the ice-shelf thickness distribution, and the effect Crary Ice Rise has on the ice-shelf thickness at the grounding lines of the two ice streams. (Auth. mod.)

41-3279

Ice stream-ice shelf interaction in West Antarctica.

Bindschadler, R.A., et al, Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.161-180, 20 refs.

MacAyeal, D.R., Stephenson, S.N.

Ice shelves, Strain tests, Ice deformation, Mapping, Ice creep, Glacier flow, Rheology, Streams, Velocity, Antarctica—West Antarctica, Antarctica—Ross Ice Shelf.

Results are presented from two years of field data collected along the Siple Coast region of West Antarctica. Measurements were made in the vicinities of base camps which were established in the mouths of ice streams B and C and at the upstream edge of Crary Ice Rise. The annual rate of ice deformation in Ice Stream C is very small. The surface topography of Ice Stream B exhibits elongated ridges instead of the smoother surface of Ice Stream C. Regions of Ice Stream B with a lower surface elevation move faster than higher elevation regions, presumably because the lower-elevation ice is thinner and experiences less basal friction. Surface strain rates at Ice Stream B vary on a scale similar to the topographic relief but transverse differences in downstream velocity are only 1 to 2% of the 527 m/yr ice motion. This value is slightly higher than predictions of the balance velocity which range between 450 and 480 m/yr. Near Crary Ice Rise, surface strain rates show increasing compression of the ice as it approaches the ice rise. The upstream boundary of Crary Ice Rise has been accurately determined based on a combination of surface measurements, aerial photography and radar-sounding data. (Auth. mod.)

41-3280

A few preliminary results from the glaciogeophysical survey of the interior Ross Embayment (GSIRE).

Bentley, C.R., et al, Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.181-184, 2 refs.

Ice shelves, Ice surface, Velocity measurement, Ice sheets, Glacier flow, Subglacial observations, Mapping, Ice creep, Radar tracking, Rheology, Streams, Antarctica—Ross Ice Shelf.

Extensive airborne radar measurements were made during the 1984-85 field season covering ice streams A, B and C, Crary Ice Rise, and the grid northwestern corner of the Ross Ice Shelf. A sample profile across Ice Stream A shows a pronounced subglacial trough. Surface features showing in the radargram suggest the boundaries between the outflow, within Ice Stream A, from Reedy Glacier, Horlick/Shimizu Ice Stream, and the glaciers in between. These boundary zones can be traced downstream across the Ross Ice Shelf to a point about grid north of Crary Ice Rise. The ridge between ice streams A and B is relatively free of surface "clutter" produced by crevassing. The grid northern boundary of Ice Stream branch B1 (the grid northerly branch), marked by pronounced surface crevassing, overlies nearly the bottom of a downslope into a subglacial trough. Profiles over Crary Ice Rise show the striking contrast between clutter-free ice on the ice rise and strong clutter over the surrounding ice shelf. Short-pulse radar surveys have been carried out on the surface at camps UPB and UPC, the latter being on Ice Stream C. Abundant near-surface crevasses are seen around both camps, at an average depth of about 15 m at UPB and about 35 m at UPC.

41-3281

On the flow within the transition zone between ice sheet and ice shelf.

Herterich, K., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.185-202, 7 refs.

Ice models, Ice shelves, Ice sheets, Velocity measurement, Glacier flow.

The horizontal and vertical velocity components within the transition zone between ice sheet and ice shelf are computed on a plane perpendicular to the grounding line. The transition flow is found numerically by solving a non-linear elliptic differential equation with fixed boundary conditions. The transition zone is located around the grounding line and its width is of the order of the ice thickness. In the case of basal sliding the transition zone can be widened considerably. The Riiser-Larsenisen Ice Shelf is considered to be a promising candidate where two-dimensional calculation might be applied. (Auth. mod.)

41-3282

Finite-element method applied to a time-dependent flowband model.

Fastook, J.L., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.203-221, 12 refs.

Ice models, Velocity measurement, Ice sheets, Glacier flow, Ice creep, Glacier flow, Rheology, Streams, Antarctica—Ross Ice Shelf, Antarctica—Byrd Glacier.

The finite-element technique as applied to a 1-D flowband model of an ice sheet is described, as well as several modeling experiments to demonstrate the power of this technique. Based on the time-dependent continuity equation with ice velocity specified by a combination of flow and sliding laws, this fully time-dependent flowline-oriented finite-element model is used to: compare computed steady-state and measured velocities in the Byrd Glacier, as well as to derive driving stress patterns, and estimates of the degree of sliding and creep deformation; show the time evolution of an idealized flowband in which the ice hardness parameter undergoes a sudden 50% reduction; show the time evolution of an idealized flowband in which the

accumulation is doubled, investigate the formation of an ice stream in a region originally dominated by sheet flow, and to display the time evolution of the surface elevation and the driving traction on various time scales as the ice stream forms, as well as to show the changing mass outflow at the grounding line (Auth.)

41-3283
Longitudinal stresses and basal sliding: a comparative study.
Van der Veen, C.J., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.223-248, 23 refs.
Ice sheets, Ice models, Stresses, Velocity measurement, Basal sliding.
The main problems in understanding the dynamics of a marine-based ice sheet are (i) the role played by longitudinal deviatoric stresses, and (ii) basal sliding. Although several studies have been reported in which both processes are incorporated in an ice-sheet model (either a numerical or a theoretical model), it is not clear how they affect the model outcome. An equation for the deviatoric stress is derived from the flow law and the equilibrium of forces. Incorporating this in a numerical model, together with an appropriate sliding relation, allows one to study the effect of (i) and (ii) on the behavior of the model ice sheet. As for basal sliding, two laws were applied. The classical Weertman-type sliding relation, corrected for subglacial water pressure, has little effect on the shape of the model ice sheet, a similar decrease in ice-sheet size can be obtained by increasing the deformation constant in the flow law. On the other hand, the sliding relation as used by Budd et al. (1984) causes a large thinning near the grounding line which is greatly enhanced when longitudinal stresses are incorporated in the model. Together, these processes yield a concave surface profile as observed on west antarctic ice streams. (Auth. mod.)

41-3284
Subglacial aquifer bed model and water pressure dependent basal sliding relationship for a West Antarctic Ice Stream.
Lingle, C.S., et al, Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.249-285, Refs. p.281-285.
Brown, T.J.
Ice pressure, Ice heat flux, Subglacial caves, Ice creep, Mass balance, Glacier beds, Water pressure, Rheology, Basal sliding, Subglacial drainage, Ice models, Ice sheets, Glacier flow, Antarctica—West Antarctica.
A subglacial aquifer bed model and basal sliding relationship is constructed for Ice Stream B, West Antarctica. The calculated subglacial water discharge is 3 to 18 cu m/s at the grounding line. The inferred subglacial water pressure is greater than 90% of the ice overburden pressure for the entire 300 km length of the ice stream, and greater than 96% of the ice overburden pressure for 230 km upglacier from the grounding line. This suggests that the high pore-water pressure mechanism proposed as an explanation of overthrust faulting also facilitates the rapid motion of the ice stream through the slower-moving mass of the ice sheet. Results suggest that if surge velocity is defined as abnormally high velocity for an ice mass of given geometry, due to minimal coupling at the bed caused, in turn, by high subglacial water pressure, then Ice Stream B is moving at surge velocity. This implies that ice streams may be expressions of ice-sheet surges. If so, the question of whether the West Antarctic Ice Sheet can surge (in a conventional sense), in response to warming climate caused by increasing CO2 and other "greenhouse" gases, should be replaced by the question of whether the ice streams can accelerate, such that the rate of discharge across grounding lines exceeds the rate of replenishment over catchment areas. This question is of similar significance, because if ice-stream acceleration causes the mass balance of the West Antarctic Ice Sheet to become negative, thinning will occur, grounding lines will retreat, and sea level will be affected. (Auth. mod.)

41-3285
Heat budget of the Ross drainage basin.
Oerlemans, J., Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.287-292, 11 refs.
Ice shelves, Heat balance, Ice temperature, Glacier mass balance, Ice heat flux, Subglacial drainage, Ice models, Antarctica—Ross Ice Shelf.
Integration of the thermodynamic equation over an entire drainage basin yields a fairly simple expression for the steady-state heat balance. This stems from the fact that dissipative heating can be calculated directly from the release of gravitational energy. When mass balance, surface temperature and geothermal input are known, the mean ice temperature at the grounding line can be obtained as a residual. The procedure is applied to the drainage basin feeding the Ross Ice Shelf. The resulting mean outlet temperature is -16.2 C. The heating rates making the balance turn out to be (in 0.0001 K/yr): dissipation 8.2, advective flux divergence -13.5 and geothermal heating 5.3. The method also reveals how the mean outlet temperature depends on mass balance, surface elevation, etc. (Auth.)

41-3286
Numerical modelling of the large-scale basal water flux under the West Antarctic Ice Sheet.
Budd, W.F., et al, Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.293-320, Refs. p.318-320
Jenssen, D.
Ice creep, Meltwater, Water flow, Ice temperature, Velocity measurement, Ice models, Ice shelves, Ice melting, Basal sliding, Rheology, Shear stress, Subglacial drainage, Glacier heat balance, Glacier beds, Streams, Antarctica—Ross Ice Shelf.
The three-dimensional ice-sheet model of the Ross Ice Shelf Basin has been used to compute basal temperatures and melt rates for a wide range of values of the geothermal flux. Steady state is assumed and ice "balance velocities" are computed from continuity and used in the heat-conduction equation. As the geothermal flux increases, the melt area increases and becomes connected to the water under the Ross Ice Shelf via the major ice streams. The large-scale average surface and bed slopes are used to determine the broadscale pattern of flow of the basal meltwater on the assumption that it flows as a film at the ice-bedrock interface. The total water volume flux for steady state is determined from the basal melt rates and continuity, and the film assumption then allows the mean water film thickness and velocities to be computed. The resulting pattern of steady-state mean water-film thickness is then interpreted in terms of its possible relationships to the basal sliding rates and the basal shear stress particularly under the major ice streams. (Auth.)

41-3287
Modelling the response of the West Antarctic Ice Sheet to a climatic warming.
Budd, W.F., et al, Dynamics of the West Antarctic Ice Sheet. Edited by C.J. van der Veen and J. Oerlemans, Dordrecht, D. Reidel, 1987, p.321-358, Refs. p.351-358.
McInnes, B.J., Jenssen, D., Smith, I.N.
Ice models, Ice shelves, Climatic changes, Sea ice, Ice temperature, Ice sheets, Sea level, Ice melting, Antarctica—Ross Ice Shelf.
The present generation of coupled atmosphere-ocean general circulation models have provided useful information on the possible decrease in the antarctic sea-ice cover and the increase in ocean temperatures over time as a result of the warming following the increased atmospheric carbon dioxide concentration. This information has been used to analyze the extreme likely increases in the melt rates of the antarctic ice shelves and the resulting increased strain rates which could then occur near the grounding lines. A hierarchy of ice-sheet modelling studies has been carried out covering the fast-flowing ice streams, the ice sheet thermal regime and the whole Antarctic at a coarser resolution. The range of consequences likely for ice loss and sea-level rise are computed in detail for the next 500 years, and in less detail for several thousand years hence. It is concluded that the effects for sea-level change could be substantial but of a magnitude (up to 1 m in 500 years and 3.5 m in 1000 years) and a rate of change (maximum of 0.6 m/100 years) that could be manageable if adequate monitoring and planning are carried out. (Auth. mod.)

41-3288
Heat transfer, 1986; proceedings.
International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986, Washington, Hemisphere Publishing Corporation, 1986, 6 vols. + 1 vol. of abstracts, Refs. passim. For selected papers see 41-3289 through 41-3299.
Tien, C.L., ed, Carey, V.P., ed, Ferrell, J.K., ed.
Heat transfer, Phase transformations, Melting, Freezing, Meetings, Solid phases, Laminar flow, Convection, Stefan problem, Analysis (mathematics).

41-3289
Phase-change heat transfer in porous media.
Torrance, K.E., International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.1, Washington, Hemisphere Publishing Corporation, 1986, p.181-188, 31 refs.
Soil freezing, Heat transfer, Frost heave, Phase transformations, Porous materials, Ice lenses, Soil water, Saturation.

41-3290
Analysis of transient heat transfer measurements on porous thermal insulations.
Tong, T.W., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.2, Washington, Hemisphere Publishing Corporation, 1986, p.703-708, 8 refs.
McElroy, D.L., Yarbrough, D.W.
Thermal insulation, Heat transfer, Porous materials, Convection, Radiation, Analysis (mathematics), Tests, Models.

41-3291
Evaluation of simple analytical solutions for the prediction of freeze-up time, freezing, and melting.
Dilley, J.F., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1727-1732, 5 refs.
Lior, N.
Freezeup, Freezing, Ice melting, Heat transfer, Heat flux, Air temperature, Analysis (mathematics), Time factor, Forecasting.

41-3292
Buoyancy and surface tension driven natural convection with solidification.
Munakata, T., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1733-1738, 4 refs.
Tanasawa, I.
Crystal growth, Solid phases, Heat transfer, Liquid solid interfaces, Convection, Surface properties, Tensile properties, Buoyancy, Temperature effects, Analysis (mathematics).

41-3293
Laminar flow heat transfer in a tube with internal solidification.
Toda, S., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1745-1750, 8 refs.
Heat transfer, Laminar flow, Solid phases, Freezing, Liquid solid interfaces, Pipes (tubes), Flow rate, Fluid flow.

41-3294
Non-isothermal and transient flow of molten polymer in an open rectangular cavity.
Flaman, A.A.M., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1751-1754, 4 refs.
Dijksman, J.F.
Polymers, Heat transfer, Phase transformations, Plastics, Convection, Analysis (mathematics), Temperature distribution.

41-3295
Outward phase change in a cylindrical annulus with circumferential fins.
Padmanabhan, P.V., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1773-1779, 10 refs.
Krishna Murthy, M.V.
Freezing, Heat transfer, Phase transformations, Latent heat, Analysis (mathematics), Conduction, Stefan problem.

41-3296
Effects of density change and subcooling on the melting of a solid in a rectangular enclosure.
Kassinos, A., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1787-1792, 14 refs.
Prusa, J.
Melting, Cooling, Heat transfer, Phase transformations, Latent heat, Analysis (mathematics), Liquid solid interfaces, Stefan problem.

41-3297
Prediction and measurement of melting heat transfer to an unfixed phase change material heated in a horizontal concentric annulus.
Betzel, T., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1793-1798, 8 refs.
Beer, H.
Melting, Heat transfer, Phase transformations, Forecasting, Analysis (mathematics), Time factor.

41-3298
Onset of natural convection and heat transfer in a layer of water below melting ice.
Englberger, W., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1799-1804, 7 refs.
Winter, E.R.F.
Heat transfer, Ice melting, Subglacial observations, Water flow, Convection.

41-3299
Direct contact melting heat transfer on a heated surface.
Saito, A., et al, International Heat Transfer Conference, 8th, San Francisco, CA, Aug. 17-22, 1986. Proceedings. Edited by C.L. Tien, V.P. Carey and J.K. Ferrell. Vol.4, Washington, Hemisphere Publishing Corporation, 1986, p.1805-1810, 5 refs.
Utaka, Y., Tokihiro, Y.
Ice melting, Heat transfer, Melting points, Surface temperature, Phase transformations, Latent heat, Heat flux, Stefan problem, Analysis (mathematics), Experimentation.

41-3300
Plane steady shear flow of a cohesionless granular material down an inclined plane: a model for flow avalanches, part 1: theory.
Hutter, K., et al, *Acta mechanica*, 1986, 63(1), p.87-112, 25 refs.
Szidarovszky, F., Yakowitz, S.
Avalanche mechanics, Snow mechanics, Mathematical models.

41-3301
Verification tests for a stiff inclusion stress sensor.
Cox, G.F.N., et al, *International journal of rock mechanics and mining sciences and geomechanics abstracts*, Feb. 1987, 24(1), MP 2223, p.81-88, 14 refs.
Johnson, J.B.
Rock mechanics, Strain measuring instruments, Stresses, Ice mechanics, Impurities.

41-3302
Glacier-dammed lake investigations in the Hullet Lake area, South Greenland.
Dawson, A.G., *Meddelelser om Grönland, Geoscience*, 1983, No.11, 24p., 23 refs.
Glacial lakes, Ice dams, Glacier oscillation, Subglacial drainage, Moraines, Lichens, Glacier ice, Paleoclimatology, Greenland—Hullet Lake.

41-3303
Storage and release of water from a large glacier-dammed lake: Russell Lake near Yakutat, Alaska, 1986.
Seitz, H.R., et al, *U.S. Geological Survey. Open-file report*, 1986, No.86-545, 10p., 4 refs.
Thomas, D.S., Tomlinson, B.
Glacial lakes, Lake water, Water reserves, Subglacial drainage, Water level, Ice dams, United States—Alaska—Russell Lake.

41-3304
Realization of the ice point.
Georgiuss, R.S., *Indian journal of technology*, Sep. 1986, Vol.24, p.573-575, 14 refs.
Freezing points, Ice water interface, Electrical resistivity, Ice physics, Thermodynamics, Temperature effects.

41-3305
Calibration procedure for a daily flow model of small watersheds with snowmelt runoff in the Green River coal region of Colorado.
Norris, J.M., et al, *U.S. Geological Survey. Water-resources investigations report*, 1985, 83-4263, 32p., 10 refs.
Parker, R.S.
Runoff, Snowmelt, Watersheds, Soil water, Models, Air temperature, Precipitation (meteorology), Stream flow, United States—Colorado.

41-3306
Mesoscale variability in the West Spitsbergen current and adjacent waters in Fram Strait.
Weigel, A.M., *U.S. Navy. Naval Postgraduate School, Monterey, CA.* [*Report*], Mar. 1987, NPS 68-87-002, 98p., M.S. thesis. Refs. p.85-89.
Ocean currents, Ice edge, Water temperature, Salinity, Fram Strait.

41-3307
Electronic monitoring and telematics for traffic protection along state roads. [Controlli elettronici i telematica per la protezione del traffico lungo le strade statali],
Ortolani, E., *Neve international*, 1987, 29(1), p.16-19, In Italian with French, German and English summaries. 4 refs.
Road maintenance, Winter maintenance, Computer applications, Italy.

41-3308
Winter maintenance of highways. [Viabilità invernale sulle grandi autostrade],
Lazzarotti, G., *Neve international*, 1987, 29(1), p.20-22, In Italian with French, German and English summaries.
Road maintenance, Winter maintenance, Equipment, Italy.

41-3309
Snow-gun season. [La stagione dei cannoni],
Marocchi, A., *Neve international*, 1987, 29(1), p.39-41, In Italian with French, German and English summaries.
Artificial snow, Snow crystal nuclei, Temperature effects, Equipment, Cost analysis, Italy.

41-3310
Use of contrasting D/H ratios of snows and groundwaters of eastern New York State in watershed evaluation.
Lawrence, J.R., *Water resources research*, Mar. 1987, 23(3), p.519-521, 9 refs.
Snow hydrology, Ground water, Runoff, Water reserves, Snowmelt, Flow rate, Watersheds, United States—New York.

41-3311
Heats of solution of ethane and propane in water from 0 to 50 C.
Naghibi, H., et al, *Journal of physical chemistry*, Jan. 1, 1987, 91(1), p.245-248, 29 refs.
Dec, S.F., Gill, S.J.
Solutions, Heat capacity, Chemical analysis, Temperature variations, Temperature measurement.

41-3312
Calorimetric study of the vitrified liquid water to cubic ice phase transition.
Hallbrucker, A., et al, *Journal of physical chemistry*, Jan. 29, 1987, 91(3), p.503-505, 18 refs.
Mayer, E.
Cubic ice, Ice formation, Phase transformations, Heat transfer, Aerosols, Temperature measurement, Enthalpy.

41-3313
Alaska snow surveys and Federal-state-private cooperative snow surveys.
U.S. Dept. of Agriculture. Soil Conservation Service, Anchorage, Alaska, February 1, 1987; March 1, 1987 and April 1, 1987, 3 pieces.
Clagett, G.P.
Snow surveys, Precipitation (meteorology), Snowfall, Stream flow, Diurnal variations, Snow cover, United States—Alaska.

41-3314
Nimbus 7 SMMR investigation of snowpack properties in the northern Great Plains for the winter of 1978-79.
McFarland, M.J., et al, *Geoscience and remote sensing*, Jan. 1987, GE-25(1), p.35-46, 21 refs.
Wilke, G.D., Harder, P.J., II.
Snow cover distribution, Remote sensing, Radiometry, Brightness, Snow cover structure.

41-3315
Analysis of the tensor dielectric constant of sea ice at microwave frequencies.
Stogryn, A., *Geoscience and remote sensing*, Mar. 1987, GE-25(2), p.147-158, 20 refs.
Ice electrical properties, Dielectric properties, Ice salinity, Sea ice.

41-3316
Seasonal and regional variations of active/passive microwave signatures of sea ice.
Livingstone, C.F., et al, *Geoscience and remote sensing*, Mar. 1987, GE-25(2), p.159-173, 35 refs.
Singh, K.P., Gray, A.L.
Radiometry, Remote sensing, Sea ice, Wet snow.

41-3317
Microwave sea-ice signatures near the onset of melt.
Livingstone, C.E., et al, *Geoscience and remote sensing*, Mar. 1987, GE-25(2), p.174-187, 31 refs.
Radiometry, Remote sensing, Sea ice, Ice melting.

41-3318
Relation of millimeter-wavelength backscatter to surface snow properties.
Williams, L.D., et al, *Geoscience and remote sensing*, Mar. 1987, GE-25(2), p.188-194, 18 refs.
Gallagher, J.G.
Backscattering, Snow electrical properties, Wet snow, Snow surface.

41-3319
Glaciation and the evolution of the Canadian high arctic landscape.
England, J., *Geology*, May 1987, 15(5), p.419-424, 65 refs.
Arctic landscapes, Glaciation, Geologic processes, Canada—Northwest Territories—Arctic Archipelago.

41-3320
Plot measurements of snowmelt runoff for varying soil conditions.
Kane, D.L., et al, *Geophysica*, 1984, 20(2), p.123-135, 18 refs.
Stein, J.
Snowmelt, Runoff, Soil water, Seepage, Measurement.

41-3321
Water chemistry during snowmelt in a northern basin.
Barry, P.J., et al, *Geophysica*, 1984, 20(2), p.137-155, 6 refs.
Snowmelt, Water chemistry, Snow composition.

41-3322
Method for the continuous monitoring of snow: application to the cryptoendolithic microbial community of Antarctica.
Friedmann, E.I., et al, *Antarctic journal of the United States*, 1985, 20(5), p.179-181, 14 refs.
McKay, C.P.
Cryobiology, Monitors, Microclimatology, Snow, Antarctica—Victoria Land, Antarctica—Wright Valley.
As part of a concentrated effort to study the cryptoendolithic microbial community, automatic data-acquisition systems were developed, capable of year-round recording of biologically significant environmental data. To monitor the water cycle in the rocks, a method of detecting both moisture in the rocks and snowfall was required. In this paper, a simple, reliable method for detecting the presence of snow on rock surfaces is described. The study site is Linnaeus Terrace on the southern slope of Wright Valley, an area particularly rich in cryptoendolithic microbial life. A simple qualitative snow monitor, based on measuring conductivity of a salt-impregnated porous disc placed on the surface rocks, is described and shown. It is pointed out that the instrument monitors the presence of snow on the disc rather than the amount of snow or snowfall. Yet, for characterization of the biological effect of snow, it is the snow cover on the rocks (rather than the amount of fallen snow that may be removed by wind or sublimation) that is the significant parameter.

41-3323
Airborne measurements of the antarctic cloud water acidity.
Saxena, V.K., et al, *Antarctic journal of the United States*, 1985, 20(5), p.201-203, 8 refs.
Ruggiero, F.H., Parungo, F.P.
Chemical properties, Snow composition, Cloud cover, Atmospheric composition, Antarctica—Ross Sea.
Samples of cloud water were collected from antarctic coastal stratus during the 1982-1983 austral summer to assess the natural component of cloud-water acidity. The pH value ranged between 4.9 and 6.2, and the average value was below that expected for the Antarctic, so far from all anthropogenic sources of acidic and acidifying substances. Acidity was found to increase with height inside the cloud probably due to the entrainment of sulfate rich stratospheric air at the cloud top. Average levels of sulfate were found to be of the same magnitude as those in more anthropogenic regions while nitrate levels were much lower in antarctic stratus clouds than elsewhere. Results of the analysis of the cloud water samples are presented.

41-3324
Aerosol transport processes in the Antarctic.
Hogan, A.W., et al, *Antarctic journal of the United States*, 1985, 20(5), p.205-206, 4 refs.
Samson, J.A.
Aerosols, Atmospheric composition, Snow surface temperature, Temperature measurement, Sastrugi, Snow thermal properties, Antarctica—Amundsen-Scott Station.
The 1984-1985 summer activities at Amundsen-Scott Station are reported. They include aerosol observations and particle collections; wind surveys, with updating of wind instruments on the meteorological tower and installation of an experimental precipitation collector; vertical measurements of temperature on the tower; and working with a new computer system through a series of programs to facilitate on-site analysis and reduction of meteorological, climatological, and upper-air data. Due to the occurrence of very large sastrugi in the vicinity of the station, a polished steel funnel was used as a radiation shield for temperature measurements on the surface of the sastrugi which resulted in readings showing large temperature differences be-

tween the sunlit and shadowed sides. For aerosol experiments in Nov, a new impactor concentrator was used to collect particles with diameters greater than 0.1 micrometer but less than 0.5 micrometer which seem to dominate the particle mass, according to light scattering measurements. Analysis of these particles showed an abundance of sulfur. Silicon-containing particles were frequent in the size classes above 0.5 micrometer. A similar experiment was conducted during Jan., and one of the most interesting aspects of this period was the strong, and unusually high, temperature inversion located about 1,000 m above the surface.

41-3325
Chemical tests of antarctic hygroscopic aerosols.
Ohtake, T., *Antarctic journal of the United States*, 1985, 20(5), p.208-210, 7 refs.
Aerosols, Ice formation, Ice nuclei, Antarctica—South Pole.

To clarify the mechanism of polar atmospheric ice crystals, aerosols for ice nucleation were examined at the South Pole in austral summers 1982-1983 and 1983-1984. Formation of ice crystals on the aerosols was confirmed when relative humidity rises to 82% at -25 C or 79% at -37 C. On the basis of these observations, it is postulated that the hygroscopic aerosols in the polar atmosphere deliquesce in ambient humid air and are followed by freezing of the submicron-sized water droplets to ice crystals at low temperatures. These short-lived water droplets and subsequent ice crystals are small enough to be nearly invisible, unless the ice crystals grow to a larger size. The minimum size of collected particles was estimated to be 0.01 micrometer in diameter. An example of the particles collected is shown. The preliminary results of electron microscopy show the following: most of the aerosols sampled by the cascade impactor were identified as sulfate, the low-pressure impactor was able to collect sulfuric acid particles at a rate of about 4 particles per cu cm at mean diameter of 0.1 micrometer, minimum size detected was 0.1 micrometer, the factions of sulfate particles were about 99% total aerosols. Other aerosols (1%) were identified as combustion by-products and soil particles rather than sulfate, those few soil particles do not seem to be mixed with any sulfate.

41-3326
Development of an automatic geophysical observatory.
Doolittle, J.H., et al, *Antarctic journal of the United States*, 1985, 20(5), p.229-231, 3 refs.
Mende, S.B.
Remote sensing, Laboratories, Cold weather operation, Antarctica.

The United States experience with unmanned facilities in remote locations is reviewed from the Stanford University prototype of 1969. Problems and improvements over the years are discussed. A new design with expanded facilities and capabilities is described.

41-3327
Landsat multispectral images of Antarctica applied to mapping and glaciology.
Lucchitta, B.K., et al, *Antarctic journal of the United States*, 1985, 20(5), p.256-253, 9 refs.
Edwards, K., Eliason, E.M., Bowell, J.
Aerial surveys, Mapping, Spaceborne photography, Ice sheets, Antarctica.

The U.S. Geological Survey is conducting a program to provide digitally enhanced, multispectral (MSS) Landsat images of Antarctica. The goal is to furnish accurate planimetric, false-color composite-image maps in polar stereographic projection for these purposes: (1) to locate and delineate blue-ice areas for the collection of meteorites, (2) to produce special-purpose maps showing selected features only; (3) to provide synoptic views that aid in the detection and interpretation of glaciological features associated with ice sheets, outlet glaciers, ice streams, and ice shelves, (4) to monitor changes in coastlines and glacial features, (5) to enable the superposition and correlation of different types of digital cartographic data; and (6) to furnish spectral and or structural information in areas of limited bedrock outcrop to aid in regional geologic interpretation. Details of progress in the first four objectives are presented.

41-3328
Ship operations.
Marthaler, J.G., *Antarctic journal of the United States*, 1985, 20(5), p.267-269.
Icebreakers, Tanker ships, Cargo, Logistics, Antarctica.

Two U.S. Coast Guard icebreakers operated in the Antarctic in the 1984-1985 season in support of the U.S. Antarctic Program. *USCGC Polar Star* resupplied and refueled Palmer Station, performed the channel break-in to McMurdo Station, assisted in the escort of the resupply ships *USNS Maumee* (a tanker) and *M/V Green Wave* (a cargo ship) into and out of Winter Quarters Bay, and conducted three science cruises, one in McMurdo Sound, one in the Ross Sea, and one off the Oates Coast. The U.S. Coast Guard icebreaker *Glacier* delivered the initial supply and wintering crew relief to Palmer Station and conducted an extensive science support program from the South Orkney Islands along the western Antarctic Peninsula to the Bellingshausen and Amundsen Seas. A detachment of two HH-52A helicopters from the Coast Guard Aviation Training Center, Mobile, Alabama, was assigned to each icebreaker. AVDET 104 operated from *Glacier*, and AVDET 105 operated from *Polar Star*. The tank ship *USNS Maumee*, an old antarctic veteran, and the dry-cargo ship *M/V Green Wave*, on her maiden voyage to Antarctica, supplied fuel and cargo to McMurdo Station. Details of the operations are given.

41-3329
Recommendations for the design and construction of geocryogenic coolers. [Rekomendatsii po proektirovaniiu i stroitel'stvu geokriogennykh okhladitelei].
Kuz'min, G.P., et al, Yakutsk, 1986, 66p., In Russian with abridged English table of contents enclosed. 9 refs.
[Akovlev, A.V.
Permafrost control, Underground storage, Cooling systems, Artificial ice, Design.

41-3330
Rational utilization and preservation of ground water in the Buryat ASSR. [Ratsional'noe ispol'zovanie i okhrana podzemnykh vod Buriatii].
Rezanov, I.N., ed, Ulan-Ude, 1986, 114p., In Russian. For selected paper see 41-3331. 1 ref.
Water storage, Reservoirs, Tailings, Permafrost beneath structures, Frozen fines, Hydraulic structures, Dams.

41-3331
Hydrogeological and engineering-geological prerequisites for the construction of water reservoirs and tailing dumps in the Buryat ASSR. [Gidrogeologicheskie i inzhenerno-geologicheskie predposylki dlia stroitel'stva vodo- i khvostokhranilishch v Buriatskoi ASSR].
Adushinov, A.A., Ratsional'noe ispol'zovanie i okhrana podzemnykh vod Buriatii (Rational utilization and preservation of ground water in the Buryat ASSR) edited by I.N. Rezanov, Ulan-Ude, 1986, p.52-59, In Russian. 1 ref.
Water storage, Reservoirs, Tailings, Permafrost beneath structures, Frozen fines, Hydraulic structures, Dams, Embankments.

41-3332
Evaluation and prevention of water damage to asphalt pavement materials.
Symposium on Water Damage of Asphalt Pavements: its Effect and Prevention, Williamsburg, VA, Dec. 1984, *American Society for Testing and Materials, Special technical publication*, Dec. 1985, No.899, 154p., Refs. passim. For selected papers see 41-3333 through 41-3336.
Ruth, B.E., ed.
Bituminous concretes, Pavements, Freeze thaw cycles, Damage, Countermeasures, Concrete admixtures, Meetings, Water.

41-3333
Evaluation of stripping problems in Oregon.
Takallou, H., et al, *American Society for Testing and Materials. Special technical publication*, Dec. 1985, No.899, Symposium on Water Damage of Asphalt Pavements: its Effect and Prevention, Williamsburg, VA, Dec. 1984. Proceedings. Edited by B.E. Ruth, p.22-48, 10 refs.
Hicks, R.G., Wilson, J.E.
Pavements, Bitumens, Freeze thaw cycles, Damage, Saturation, Countermeasures, Climatic factors.

41-3334
Changes in asphalt concrete durability resulting from exposure to multiple cycles of freezing and thawing.
Gilmore, D.W., et al, *American Society for Testing and Materials. Special technical publication*, Dec. 1985, No.899, Symposium on Water Damage of Asphalt Pavements: its Effect and Prevention, Williamsburg, VA, Dec. 1984. Proceedings. Edited by B.E. Ruth, p.73-88, 7 refs.
Concrete durability, Freeze thaw cycles, Bituminous concretes, Concrete strength, Damage, Tensile properties, Fatigue (materials), Saturation.

41-3335
Laboratory study of the effectiveness of various admixtures on the attenuation of moisture damage upon various foamed asphalt mixtures.
Castedo, H., et al, *American Society for Testing and Materials. Special technical publication*, Dec. 1985, No.899, Symposium on Water Damage of Asphalt Pavements: its Effect and Prevention, Williamsburg, VA, Dec. 1984. Proceedings. Edited by B.E. Ruth, p.104-115, 14 refs.
Beaudoin, C.C., Altschaeffl, A.G.
Bituminous concretes, Pavements, Concrete durability, Concrete admixtures, Freeze thaw cycles, Tests, Moisture, Damage, Countermeasures.

41-3336
Prevention of water damage in asphalt mixtures.
Kennedy, T.W., *American Society for Testing and Materials. Special technical publication*, Dec. 1985, No.899, Symposium on Water Damage of Asphalt Pavements: its Effect and Prevention, Williamsburg, VA, Dec. 1984. Proceedings. Edited by B.E. Ruth, p.119-133, 25 refs.
Bituminous concretes, Pavements, Freeze thaw tests, Concrete admixtures, Damage, Moisture, Countermeasures, Aggregates.

41-3337
New theory and numerical method for solving plane steady chute flows of a granular material. Applications to flow avalanches.
Szidarovszky, F., et al, *Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1986, No.89, 105p., With German and French summaries. 16 refs.
Hutter, K., Yakowitz, S.
Avalanche mechanics, Shear flow, Avalanche deposits, Mathematical models, Computer programs.

41-3338
Activities of the Alaska District, Water Resources Division, U.S. Geological Survey, 1987.
Snyder, E.F., comp., *U.S. Geological Survey. Open-file report*, 1987, No.87-38, 24p., 6 refs.
Water reserves, Hydrology, Runoff, Ground water, Lake water, Glacial hydrology, Surface waters, Bottom sediment, United States—Alaska.

41-3339
Enthalpy method applied to phase change problems in arbitrarily shaped regions.
Masiulaniec, K.C., et al, International Conference on Numerical Methods in Thermal Problems, 4th, Swansea, UK, July 15-18, 1985. Proceedings. Part 1. Edited by R.W. Lewis and K. Morgan, Swansea, UK, Pineridge Press Ltd., 1985, p.194-205, 10 refs.
Keith, T.G., Jr., DeWitt, K.J.
Ice melting, Phase transformations, Liquid solid interfaces, Heat transfer, Enthalpy, Thermodynamics, Offshore structures, Mathematical models, Computer applications.

41-3340
On the numerical analysis of heat transfer with phase change in groundwater flow of large Peclet number.
Kawatani, T., et al, International Conference on Numerical Methods in Thermal Problems, 4th, Swansea, UK, July 15-18, 1985. Proceedings. Part 1. Edited by R.W. Lewis and K. Morgan, Swansea, UK, Pineridge Press Ltd., 1985, p.206-217, 14 refs.
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The usefulness is explored of the *in situ* cosmogenic H-3, C-14, and Be-10 produced by spallation of oxygen nuclei in ice, as tracers to determine net accumulation/ablation rates of ice sheets. The application of the *in situ* H-3 and Be-10 is severely constrained because, at deposition, ice contains appreciable amounts of these isotopes from the atmosphere. The case is much more favorable for C-14, which is not carried with wet precipitations; atmospheric C-14 gets mechanically trapped in the ice during deposition. It is pointed out that cosmogenic C-14 would probably exist as CO-14 in ice. Conditions under which these isotopes can be used to study net accumulation and ablation rates are discussed along with available data on C-14 and Be-10 on polar ice from accumulation and ablation zones. It is concluded that H-3 and C-14 should find wide applications

in studying ice dynamics and Be-10 in very special circumstances. Tables are included showing concentrations of C-14 and Be-10 at Byrd Station, Allan Hills, Dome C, Vostok, and in the Yamato Mountains. (Auth.)

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Lake ice, Climatic changes, Ice conditions, Ice cover effect, Freezeup, Ice breakup, Air temperature, Statistical analysis.

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Limnology, Light transmission, Light (visible radiation), Ice cover effect, Photosynthesis, Antarctica—Hoare, Lake.
Spectral downwelling irradiance (400-700 nm) was determined in the ice-covered Lake Hoare located in the dry valleys near McMurdo Sound. Full waveband PAR beneath the ice was <3% of surface downwelling irradiance. Maximum light transmission just beneath the 2.6-4 m ice cover, which contained sediments and air bubbles, occurred between 400-500 nm. In the water column below, attenuation of light by phytoplankton in the 400-500 nm region and between 656-671 nm suggested absorption of light by algal pigments. (Auth.)

41-3427
Ice diatom floras, Arthur Harbor, Antarctica.
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Slush, Sea ice, Fast ice, Cryobiology, Microbiology, Algae, Pack ice, Antarctica—Arthur Harbor.
Sea-ice microflora was collected from Dec. 1971 to Nov. 1972 from a variety of types of sea ice in the vicinity of Arthur Harbor, Anvers Island, Antarctic Peninsula. Sixty-seven identifiable species of diatoms, one silicoflagellate and several archaeomonads were recovered from the ice. Of these, only 24 diatoms and the archaeomonads were considered to be truly cryophilic based on their occurrence and abundance. Q-mode factor analysis revealed that 4 factors (species occurrences) account for 89% of the data. In a general way, these four factors are related to ice type: shore ice protected from turbulence, grounded pack ice, slush ice and sea ice. Shannon-Wiener species diversity functions range from 0.000 (monospecific) to 3.0515 (dominance divided among 9 species). Diversity also appeared to be related to ice type: protected shore ice was low, sea ice was intermediate, and grounded pack, exposed shore ice and slush were highest. Short-term variability in physical biotic environment may control species diversity. Sea-ice assemblages may be useful in paleoclimatic interpretations of past ice distributions. (Auth.)

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Marine deposits, Glacial erosion, Slope processes, Permafrost origin, Frozen fines, Thixotropy, Permafrost structure, Dislocations (materials), Unfrozen water content, Pleistocene, Paleoecology.

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Shchukin, G.G.
Ice surveys, Radar photography, Fast ice, Sea ice distribution, Drift, Polynyas.

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41-3433
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Tundra, Taiga, Vegetation, Cryogenic soils, Soil erosion, Economic development, Fires, Air pollution, Revegetation.

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Subarctic landscapes, Environmental protection, Economic development, Human factors, Air pollution, Water pollution, Soil pollution, Climatic factors, Seasonal variations.

41-3437
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41-3438
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Engineering geology, Ice (construction material), Ground ice, Geocryology, Permafrost control, Hydraulic structures, Frozen rock strength, Dams, Rock fills, Earth fills.

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Electric power, Hydraulic structures, Permafrost beneath structures, Dams, Permafrost structure, Ice veins, Engineering geology, Geocryology.

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Hydraulic structures, Permafrost beneath structures, Dams, Electric power, Permafrost physics, Permafrost thermal properties, Hydrothermal processes.

41-3443
Changes in physical and mechanical properties of frozen ground used as construction material. [Izmenenie fiziko-mekhanicheskikh svoistv merzlogo grunta pri ego ispol'zovanii v kachestve stroitel'nogo materiala],
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Frozen ground strength, Construction materials, Earth dams, Permafrost bases, Frozen fines.

41-3444
Engineering and geological conditions of construction and operation of hydraulic structures built on perennially frozen hard rocks. [Inzhenerno-geologicheskie usloviia stroitel'stva i ekspluatatsii gidrotekhnicheskikh sooruzhenii vozvodimykh na mnogoletnemerzlykh skal'nykh porodakh],
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Krivonogova, N.F.
Permafrost structure, Permafrost physics, Ground ice, Frozen rock strength, Frost heave, Hydraulic structures, Permafrost bases, Stresses.

41-3445
Influence of temperature regime and ice content on deformation of embankments built of coarse-clastic soils. [O vliianii temperaturnogo rezhima i l'distosti na deformiruemost' nasypei iz krupnooblomochnykh gruntov].
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Hydraulic structures, Dams, Embankments, Permafrost bases, Rock fills, Earth fills, Thermal regime.

41-3446
Regularities governing frost heave of ground and prospects of their use in construction. [Nekotorye zakonomernosti moroznogo pucheniia gruntov i perspektivy ikh ispol'zovaniia v stroitel'stve].
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Soil freezing, Frost penetration, Frost heave, Mathematical models.

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Engineering and geological problems in building hydraulic structures on perennially frozen rocks. [Inzhenerno-geologicheskie problemy pri gidrotekhnicheskom stroitel'stve na mnogoletnemerzlykh porodakh].
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Hydraulic structures, Permafrost beneath structures, Frost penetration, Soil water migration, Ice crystal growth.

41-3448
Cryogenic processes and the stability of tailing-dumps built on permafrost bases. [Kriogennye protsessy i ustoichivost' khvostokhranilishch na mnogoletnemerzlykh osnovaniiakh].
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Tailings, Embankments, Permafrost beneath structures, Permafrost bases, Hydraulic structures, Electric power.

41-3449
Geophysical research for the construction of hydraulic structures in permafrost areas. [Geofizicheskie issledovaniia pod gidrotekhnicheskoe stroitel'stvo v raionakh rasprostraneniia mnogoletnei merzloty].
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Mikhaflovskii, G.V., Kuntsevich, S.P.
Permafrost physics, Permafrost structure, Geophysical surveys.

41-3450
Changes in geocryological conditions of water-reservoir basins. [Ob izmenenii geokriologicheskikh uslovii chashi vodokhranilishcha].
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Water reserves, Reservoirs, Permafrost beneath lakes, Shoreline modification, Water level, Bottom sediment, Heat transfer, Water temperature.

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Hydraulic structures, Earth dams, Earth fills, Rock fills, Thermal regime, Hydrothermal processes.

41-3452
Peculiarities of simultaneous calculation of a nonstationary temperature field and the stress-strain state of freezing and thawing massive ground. [Osobennosti sovmestnogo rascheta nestatsionarnogo temperaturnogo polia i napriazhenno-deformirovannogo sostoianiia promerzaiushchikh i ottaivaiushchikh gruntovykh massivov].
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Gul'ko, E.F., Mnushkin, M.G.
Soil freezing, Frost penetration, Freeze thaw cycles, Stresses, Strains, Analysis (mathematics).

41-3453
Stress-strain state of slopes with complex geological structure and the evaluation of their stability at different temperature regimes. [Napriazhenno-deformirovannoe sostoianie i otsenka ustoichivosti sklonov slozhnogo geologicheskogo stroeniia pri razlichnykh temperaturnykh rezhimakh].
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Gul'ko, E.F.
Slope processes, Frozen rocks, Freeze thaw cycles, Rock mechanics, Slope stability.

41-3454
Controlling filtration regimes of taliks beneath rivers by using pneumatic screens. [Regulirovanie rezhimov fil'tratsii v podruslovykh talikakh posredstvom pnevmozaves].
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Matseia, V.F.
Permafrost beneath rivers, Taliks, Water reserves, Permafrost hydrology.

41-3455
Experimental investigations of heat-mass transfer coefficients in macroporous media. [Rezul'taty eksperimental'nykh issledovanii koeffitsientov teplomassoperenosa v krupnoporistykh sredakh].
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Earth dams, Rock fills, Earth fills, Mathematical models, Seepage, Heat transfer, Mass transfer, Porous materials.

41-3456
Using frozen ground in the construction of dams in the northern construction-climatic zone. [Ispol'zovanie merzlykh gruntov pri vozvedenii plotin v severnoi stroitel'no-klimaticheskoi zone].
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Baliasnikov, G.G.
Hydraulic structures, Frozen ground strength, Earth dams, Frozen ground temperature, Frozen ground, Settlement (structural), Construction material.

41-3457
Field studies of the effect of year-round arctic navigation on mooring structures. [Naturnye issledovaniia vozdeistviia faktorov kruglogodichnoi arkticheskoi navigatsii na prichal'nye sooruzheniia].
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Kizim, A.G.
Navigation, Moorings, Polar regions.

41-3458
Temperature and moisture regime of the Vilyuy power plant dam. [Temperaturnyi i vlazhnostnyi rezhim plotiny Viliuiskoi GES].
Olovin, B.A., Problemy inzhenernogo merzlotovedeniia v gidrotekhnicheskom stroitel'stve (Engineering geocryology in hydraulic construction) edited by G.F. Biianov, Moscow, Nauka, 1986, p.151-161, In Russian. 7 refs.
Hydraulic structures, Electric power, Dams, Foundations, Permafrost beneath structures, Hydrothermal processes.

41-3459
Experience in producing fragments of water-raising hydraulic structures built of ice. [Opyt sozdaniia fragmentov vodopod"emnykh ledianykh gidrosooruzhenii].
Makarov, V.I., et al, Problemy inzhenernogo merzlotovedeniia v gidrotekhnicheskom stroitel'stve (Engineering geocryology in hydraulic construction) edited by G.F. Biianov, Moscow, Nauka, 1986, p.161-171, In Russian.
Krasnov, IU.N.
Dams, Hydraulic structures, Water level, Ice (construction material).

41-3460
Experience in building stone-earth-fill dams in the northern construction-climatic zone. [Iz opyta vozvedeniia kamenno-zemel'nykh plotin v severnoi stroitel'no-klimaticheskoi zone].
Kogodovskii, O.A., Problemy inzhenernogo merzlotovedeniia v gidrotekhnicheskom stroitel'stve (Engineering geocryology in hydraulic construction) edited by G.F. Biianov, Moscow, Nauka, 1986, p.171-182, In Russian. 4 refs.
Concrete structures, Hydraulic structures, Dams, Reinforced concretes, Prefabrication, Continuous permafrost, Earth fills, Rock fills.

41-3461
Experience in designing earth dams on permafrost (the case of the Magadan region). [Opyt proektirovaniia zemlianykh plotin na vechnoi merzlote (na primere Magadanskoi oblasti)].
Anisimov, V.A., Problemy inzhenernogo merzlotovedeniia v gidrotekhnicheskom stroitel'stve (Engineering geocryology in hydraulic construction) edited by G.F. Biianov, Moscow, Nauka, 1986, p.183-189, In Russian. 6 refs.
Hydraulic structures, Earth dams, Permafrost beneath structures, Design.

41-3462
Improving the design of underground hydraulic structures built in permafrost. [Puti sovershenstvovaniia konstruktsii podzemnykh gidrotekhnicheskikh sooruzhenii raspolozhennykh v vechnomerzlykh porodakh].
Gevirts, G.IA., et al, Problemy inzhenernogo merzlotovedeniia v gidrotekhnicheskom stroitel'stve (Engineering geocryology in hydraulic construction) edited by G.F. Biianov, Moscow, Nauka, 1986, p.190-197, In Russian. 7 refs.
Chelnokov, V.L.
Continuous permafrost, Underground facilities, Hydraulic structures, Models.

41-3463
Studying the cooling and freezing of drops under conditions of strong moisture deficiency and low pressure. [Issledovanie okhlazhdeniia i zamerzaniia kapel' v usloviiakh bol'shikh defitsitov vlazhnosti i nizkikh davlenii].
Burchuladze, N.N., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.497, p.20-31, In Russian. 6 refs.
Cloud physics, Ice crystals, Supercooled clouds, Cloud droplets, Ice nuclei, Moisture, Pressure.

41-3464
Influence of extra-low frequency electromagnetic fields on freezing of supercooled water drops. [O vliianii sverkhnizkochastotnykh elektromagnitnykh polei na zamerzanie pereokhlazhdennykh kapel' vody].
Shlykov, V.V., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.497, p.32-40, In Russian. 9 refs.
Cloud physics, Electric fields, Supercooled clouds, Cloud droplets.

41-3465
Studies of ice-forming properties of phloroglucinol under field conditions. [Izuchenie l'doobrazuiushchikh svoistv floroglutsina v polevykh usloviiakh],
Gromova, T.N., et al, *Leningrad Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.497, p.116-123, In Russian. 7 refs
Liadov, V.S., Sin'kevich, A.A., Shumakov, L.I.
Cloud seeding, Artificial nucleation, Nucleating agents, Organic nuclei.

41-3466
Geologic studies in Alaska by the U.S. Geological Survey during 1986.
Hamilton, T.D., ed, *U.S. Geological Survey Circular*, 1987, No.998, 195p., Refs. passim. For selected papers see 41-3467 through 41-3469.
Galloway, J.P., ed
Geological surveys, Ice scoring, Shoreline modification, Geochemistry, Glaciers, Paleoclimatology.

41-3467
Wright Glacier volcanic plug and dike swarm, southeastern Alaska.
Ford, A.B., et al, *U.S. Geological Survey. Circular*, 1987, No.998, p.116-118, 7 refs.
Brew, D.A.
Geological surveys, Topographic features, Glaciers, Volcanoes, Paleoclimatology, United States—Alaska—Wright Glacier.

41-3468
Beaufort Sea coastal currents: a divergence near Barter Island, Alaska?.
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Graves, S., Reimnitz, E.
Ocean currents, Ice scoring, Bottom topography, Ocean bottom, Wind factors, Drift stations, Beaufort Sea.

41-3469
Thirty-four-year shoreface evolution at a rapidly retreating Arctic coastal site.
Reimnitz, E., et al, *U.S. Geological Survey. Circular*, 1987, No.998, p.161-164, 8 refs.
Kempema, E.W.
Shoreline modification, Subsea permafrost, Water erosion, Ground thawing, Ocean bottom, Thermal effects, Settlement (structural).

41-3470
Pollen record from the Agassiz Ice Cap, northern Ellesmere Island, Canada.
Bourgeois, J.C., *Boreas*, 1986, 15(4), p.345-354, Refs. p.353-354.
Ice cores, Pollen, Drill core analysis, Palynology, Paleoclimatology, Tundra, Glacier ice, Canada—Northwest Territories—Ellesmere Island.

41-3471
Oil slicks in ice covered rivers.
Berry, B.A., et al, *Journal of hydraulic engineering*, Mar. 1985, 111(3), p.369-379, 4 refs. Discussion by H.J. Leutheusser and I.K. Tsanis, Ibid, May 1987, 113(5), p.691-692, 6 refs.
Rajaratnam, N., Leutheusser, H.J., Tsanis, I.K.
Oil spills, Ice cover effect, River ice, Stream flow, Shear stress, Velocity, Experimentation.

41-3472
Mapping permafrost in the boreal forest with thematic mapper satellite data.
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Strong, L.L.
Permafrost distribution, Forest soils, Mapping, Remote sensing, Watersheds, Soil temperature, Photointerpretation, Accuracy, United States—Alaska.

41-3473
Cold weather aspects of NBC (Nuclear, Biological and Chemical) operations—a survey of selected Warsaw Pact open source literature.
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Military operation, Cold weather operation, Military research, Surveys, Accidents, Protection, Nuclear power, Chemical composition, Cold weather tests.

41-3474
Ice scour mosaic comparison study, 1980.
Shearer, J., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, May 1980, APOA No.158-1, 17p. + figs.
Ice scoring, Bottom topography, Impact strength, Ocean bottom, Photography, Beaufort Sea.

41-3475
Analysis of NavSat buoy position data from the southeastern Beaufort Sea, 1980. Vol.2. Detailed results: 140 translocation fixes (part A).
Polar Research Laboratory, Inc., *Arctic petroleum Operators Association, Calgary, Alta. Report*, Mar. 1981, APOA No.154-1V2a, 236p.
Drift stations, Data processing, Ice mechanics, Drift, Filters, Accuracy, Statistical analysis, Beaufort Sea.

41-3476
Analysis of NavSat buoy position data from the southeastern Beaufort Sea, 1980. Vol.3. Detailed results: all 271 fixes (part A).
Polar Research Laboratory, Inc., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, Mar. 1981, APOA No.154-1V3a, 173p.
Drift stations, Data processing, Ice mechanics, Statistical analysis, Velocity.

41-3477
Analysis of NavSat buoy position data from the southeastern Beaufort Sea, 1980. Vol.3. Detailed results: all 271 fixes (part B).
Polar Research Laboratory, Inc., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, Mar. 1981, APOA No.154-1V3b, 173p.
Drift stations, Data transmission, Statistical analysis, Velocity, Seasonal variations, Beaufort Sea.

41-3478
Analysis of NavSat buoy position data from the southeastern Beaufort Sea, 1980. Vol.5. Estimates of measurement variances.
Polar Research Laboratory, Inc., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, Apr. 1981, APOA No.154-1V5, 31p., 2 refs.
Drift stations, Remote sensing, Data processing, Data transmission, Filters, Accuracy, Analysis (mathematics), Beaufort Sea.

41-3479
Effect of grain size on the internal fracturing of polycrystalline ice.
Cole, D.M., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1986, CR 86-05, 71p., ADA-171 571, Refs. p.49-51.
Ice cracks, Ice crystal structure, Fracturing, Grain size, Ice creep, Photography, Stresses.
This work presents the results of a study to examine the effects of grain size on the number and size of internal microfractures in polycrystalline ice. Laboratory-prepared specimens were tested under uniaxial, constant-load creep conditions at -5 C. Grain size ranged from 1.5 to 6.0 mm. This range of grain size, under an initial creep stress of 2.0 MPa, led to a significant change in the character of deformation. The finest-grained material displayed no internal cracking and typically experienced strains of 1/100 at the minimum creep rate. The coarse-grained material experienced severe cracking and a drop in the strain at the minimum creep rate to approximately 4/1,000. Extensive post-test optical analysis allowed estimation of the size distribution and number of microcracks in the tested material. These data led to the development of a relationship between the average crack size and the average grain size. Additionally, the crack size distribution when normalized to the grain diameter, was very similar for all specimens tested. The results indicate that the average crack size is approximately one-half the average grain diameter over the stated grain size range. A dislocation pileup model is found to adequately predict the onset of internal cracking. The work employed acoustic emission techniques to monitor the fracturing activity. This information shed light on the time and strain at which the fracturing began and when the peak fracturing rate occurred. Other topics covered in this report include creep behavior, crack healing, the effect of stress level on fracture size and the orientation of cracked grains. Theoretical aspects of the grain size effect on material behavior are also given.

41-3480
Natural rotor icing on Mount Washington, New Hampshire.
Itagaki, K., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1986, CR 86-10, 62p., ADA-170 583, 21 refs.
Lemieux, G.E., Bosworth, H.W.
Aircraft icing, Propellers, Wind tunnels, Wind velocity, Unfrozen water content, Water vapor, Ice fog.
Icing of a four-bladed rotor was studied under natural conditions at the top of Mt. Washington, N.H. The rotor had two cylindrical blades and two airfoil blades. The results were compared with studies conducted in icing wind tunnels. Considerable differences in icing regimes were observed. For instance, with comparable liquid water content and wind speed the wet-to-dry growth regime transition temperature was up to 10 C higher under natural conditions than in the wind tunnel studies. Results of other studies made under natural conditions were close to those of the present study, indicating that wind tunnel conditions are significantly different from natural conditions. Close examination of the conditions indicated that supersaturation of water vapor existing in most of the wind tunnel studies is the most probable cause of the differences

41-3481
Problems of geocryological mapping. [Voprosy geokriologicheskogo kartirovaniia],
Grave, N.A., ed, Yakutsk, 1986, 172p., In Russian. For individual papers see 41-3482 through 41-3496. Refs. passim.
Shats, M.M., ed.
Mapping, Maps, Permafrost distribution, Permafrost structure, Mountain glaciers, Rock glaciers, Glacier ice, Permafrost hydrology, Engineering geology, Transportation, Tundra, Forest tundra.

41-3482
Peculiarities of mapping rock glaciers. [Osobennosti kartirovaniia kamennykh gletcherov],
Gorbunov, A.P., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.5-22, In Russian. Refs. p.20-22.
Titkov, S.N.
Microrelief, Rock glaciers, Mapping, Slope processes, Solifluction, Moraines.

41-3483
Geologic indication of ground ice in Tien Shan and Pamir. [Geoindikatsiia podzemnykh l'dov Tian'-Shania i Pamira],
Ermolin, E.D., Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.22-29, In Russian. 7 refs.
Mapping, Ground ice, Drilling, Aerial surveys, Spaceborne photography, Buried ice.

41-3484
Deep seasonal freezing of soils and ground in the Central Asian and Kazakhstan mountains. [Glubokoe sezonnoe promerzanie pochvogruntov v gorakh Srednei Azii i Kazakhstana],
Severskii, I.V., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.29-38, In Russian. 17 refs.
Severskii, E.V.
Mountain soils, Seasonal freeze thaw, Snow cover distribution, Soil temperature, Slope processes, Mudflows, Permafrost distribution, Sporadic permafrost.

41-3485
Map of distribution and discontinuity of permafrost in western Siberia. [Karta rasprostraneniia i preryvistosti kriogennykh tolshch Zapadnoi Sibiri],
Fotiev, S.M., Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.38-52, In Russian. 4 refs.
Mapping, Maps, Permafrost distribution, Permafrost hydrology, Taliks, Thermokarst.

41-3486
Compilation of a regional geocryological forecast based on small-scale maps of natural complexes in the cryolithozone of western Siberia. [Sostavlenie regional'nogo geokriologicheskogo prognoza na osnove melkomasshtabnoi karty prirodnykh kompleksov kriolitozony Zapadnoi Sibiri],
Kritsuk, L.N., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.53-67, In Russian. 5 refs.
Mel'nikov, E.S., Moskalenko, N.G.
Tundra, Transportation, Mapping, Forest tundra, Engineering geology, Forecasting, Petroleum industry.

41-3487
Allowing for the most recent tectonics in geocryological mapping of western Siberia. [Uchet noveishei tektoniki pri geokriologicheskom kartirovanii v Zapadnoi Sibiri],
Belopukhova, E.B., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.67-78, In Russian. 12 refs.
Sukhov, A.G.
Geological surveys, Geological maps, Tectonics, Permafrost distribution.

41-3488
Regionalization of northern West Siberia according to potential for thermokarst development. [Raionirovanie severa Zapadnoi Sibiri po potentsial'noi vozmozhnosti razvitiia termokarsta],
Parmuzin, S.IU., Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.78-85, In Russian. 5 refs.
Mapping, Charts, Permafrost hydrology, Thermokarst.

41-3489
Possibilities of landscape indication in engineering-geological surveys of southern Central Yakutia. [Vozmozhnosti landshaftnoi indikatsii pri inzhenerno-geologicheskoi s"emke na iuge Tsentral'noi IAkutii],
Gravis, G.F., et al, Voprosy geokriologicheskogo kartirovanna (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.85-96, In Russian. 6 refs.
Drozdov, D.S., Stashenko, A.I.
Maps, Permafrost structure, Engineering geology, Geocryology, Mapping, Landscape types.

41-3490
Differentiations of seasonally and perennially frozen rocks in Severnoe Priamur'e. [Nekotorye osobennosti differentsiatsii sezonno- i mnogoletnemerzlykh porod Severnogo Priamur'ia],
Pozdniakov, I.V., Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.96-106, In Russian. 16 refs.
Mapping, Rivers, Valleys, Watersheds, Permafrost distribution, Seasonal freeze thaw, Microrelief, USSR—Amur River.

41-3491
Mapping frozen strata in troughs of the BAM zone. [Voprosy kartografirovaniia merzlykh tolshch vo vpadinakh v zone BAMa],
An, V.V., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.106-113, In Russian. 11 refs.
Zheleznıak, M.N.
Mapping, Permafrost structure, Permafrost hydrology, Topographic features, Baykal Amur railroad, Depressions.

41-3492
Relation between the susceptibility of permafrost landscapes and topographic dissection. [Sviaz' chuvstvitel'nosti merzlotnykh landshaftov s raschlenennost'iu rel'efa],
Klimovskii, I.V., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.113-121, In Russian. 6 refs.
Gotovtsev, S.P., Konstantinov, P.IA.
Landscape development, Permafrost structure, Frost action, Ice erosion, Snow erosion, Wind erosion, Avalanche erosion, Landscape types.

41-3493
Methods of evaluating and mapping the susceptibility of cryogenic landscapes. [K metodike otsenki i kartografirovaniia chuvstvitel'nosti merzlotnykh landshaftov],
Fedorov, A.N., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.121-133, In Russian. 19 refs.
Bosikov, N.P., Vasil'ev, I.S.
Landscape types, Permafrost distribution, Frost action, Polygonal topography, Maps.

41-3494
Remote sounding and interpretation of cryo-hydrogeochemical anomalies. [Distantsionnoe zondirovanie i rasshifrovka prirody kriogidrogeokhimicheskikh anomalii],
Makarov, V.N., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.133-144, In Russian. 2 refs.
Kondrat'ev, P.S.
Geophysical surveys, Remote sensing, Spaceborne photography, Photointerpretation, Tundra, Cryogenic soils, Permafrost hydrology, Thermokarst, Permafrost structure.

41-3495
Possibility of using the transient processes sounding method in geocryological mapping. [Vozmozhnost' zondirovaniia metodom perekhodnykh protsessov pri geokriologicheskom kartirovanii],
Nim, IU.A., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.144-153, In Russian. 9 refs.
Doktorov, I.P., Slagoda, E.A., Verkhoturov, E.G.
Geophysical surveys, Electromagnetic prospecting, Geological maps, Geocryology.

41-3496
Cryogenic factor in the evolution of landscape-geodynamic structures. [Kriogennyi faktor evoliutsii landshaftno-geodinamicheskikh struktur],
Sadovskii, A.I., et al, Voprosy geokriologicheskogo kartirovaniia (Problems of geocryological mapping) edited by N.A. Grave and M.M. Shats, Yakutsk, 1986, p.153-165, In Russian. 12 refs.
Davidenko, N.M.
Topographic features, Frost action, Landscape types, Glacial erosion, Mapping.

41-3497
Frost action on transportation facilities.
Chisholm, R.A., *Transportation Research Board. Report*, 1983, TRB/TRR-918, 57p., PB84-156 041, Contains 7 papers.
Frost action, Roads, Frost penetration, Transportation, Solar radiation, Frost forecasting, Thaw weakening, Frost resistance, Freeze thaw cycles, Soil structure, Permafrost.

41-3498
Description of the building materials data base for Cincinnati, Ohio.
Merry, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1986, SR 86-31, 85p., 14 refs.
LaPotin, P.J.
Construction materials, Precipitation (meteorology), Environmental protection, Damage, Chemical analysis, Statistical analysis, Computer programs, Sampling.
A building materials sampling program for the Cincinnati, Ohio, region was conducted in Jan. and Feb. 1985 to examine the types and amounts of building surface materials exposed to acid deposition. The stratified, systematic, unaligned random sampling approach was used to generate sample points across four sampling frame areas. A minimum of 70 sample points was examined per sampling frame to yield a total sample size of 387 points. Building sizes, surface materials, roof characteristics, roof-mounted apparatus, chimneys, gutters, downspouts and fences were recorded. This report provides an initial summary of the data collected.

41-3499
Investigation of moisture movements and stresses in frozen soils.
Williams, P.J., et al, Ottawa, Carleton University, Geotechnical Science Laboratories, Sep. 30, 1982, 46p., Refs. p.27-30.
Wood, J.A.
Frozen ground physics, Soil water migration, Stresses, Temperature effects, Measuring instruments, Models, Experimentation, Time factor, Thermistors, Soil pressure.

41-3500
Investigation of moisture movements and stresses in frozen soils.
Williams, P.J., et al, Ottawa, Carleton University, Geotechnical Science Laboratories, June 1982, 134p. + appends., Refs. p.131-134.
Wood, J.A.
Frozen ground thermodynamics, Soil water migration, Heat transfer, Mass transfer, Hydrodynamics, Regelation, Ice water interface, Ground ice, Temperature effects, Soil pressure.

41-3501
Report of pit-wall observations of snow cover in Sapporo.
Endo, Y., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1986, No.45, p.1-10, 3 refs., In Japanese.
Akitaya, E., Mizuno, Y.
Snow cover distribution, Snow depth, Statistical analysis, Temperature effects, Snow density, Japan—Sapporo.

41-3502
Electrical conductivity of snow cover and solid precipitation in Sapporo 1985-86.
Mizuno, Y., *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1986, No.45, p.11-15, 2 refs., In Japanese.
Snow electrical properties, Electrical resistivity, Snowfall, Snow accumulation, Japan—Sapporo.

41-3503
Radiation measurements of snowy season in 1986 at Sapporo.
Ishikawa, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1986, No.45, p.17-23, 1 ref., In Japanese.
Motoyama, H.
Snow physics, Thermal radiation, Snow depth, Albedo, Air temperature, Statistical analysis, Snow accumulation, Japan—Sapporo.

41-3504
Distribution of pack ice off Okhotsk Sea coast of Hokkaido observed with sea ice radar network, January-April, 1986.
Aota, M., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1986, No.45, p.25-50, In Japanese.
Sea ice distribution, Radar echoes, Remote sensing, Seasonal variations, Pack ice, Okhotsk Sea.

41-3505
Feasibility study for stresses in a pipeline buried in freezing soil.
Carleton University. Geotechnical Science Laboratories, Ottawa, Dec. 1982, 29p., 7 refs.
Soil freezing, Underground pipelines, Frozen ground mechanics, Stresses, Soil water, Deformation, Measuring instruments, Thermal regime, Experimentation, Models, Countermeasures, Analysis (mathematics).

41-3506
Investigation of permafrost and climate change—long term study. Phase 2. Preliminary final report (1984-1985).
Carleton University. Geotechnical Science Laboratories, Ottawa, [1986], var.p., Refs. passim.
Consists of 3 articles.
Permafrost hydrology, Permafrost thermal properties, Climate changes, Temperature effects, Freeze thaw cycles, Ground ice, Active layer, Water balance, Soil water migration, Frost heave, Frozen ground temperature, Isotope analysis.

41-3507
On the origin of aggradational ice in permafrost.
Burn, C.R., Ottawa, Carleton University, Dept. Geology, 1986, 222p. + append., Ph.D. thesis. Refs. p.200-222.
Permafrost distribution, Ground ice, Soil water migration, Active layer, Water balance, Glaciation, Frost heave, Temperature gradients, Permafrost thermal properties.

41-3508
NOAA Information Services for U.S. Arctic Marine Operations: an assessment of needs and technology.
National Research Council. Marine Board. Committee on Arctic Integrated Ocean Information Systems, Washington, D.C., National Academy Press, 1986, 77p., 29 refs.
Natural resources, Ice navigation, Legislation, Oceanography, Meteorological data, Sea ice, Marine transportation, Data processing, Arctic Ocean.

41-3509
Recent research in snow hydrology.
Dozier, J., *Reviews of geophysics*, Mar. 1987, 25(2), U.S. National report to International Union of Geodesy and Geophysics 1983-1986, p.153-161, Refs. p.158-161.
Snow hydrology, Runoff, Snow accumulation, Heat transfer, Albedo, Snow composition, Electromagnetic properties, Metamorphism (snow), Microstructure, Unfrozen water content, Remote sensing.

41-3510
Ice detection systems—experimental feature. Final report.
Petrak, A., et al, Salem, Oregon State Highway Division, Jan. 1986, 11p. + append. OR 80-01.
Martin, K.
Ice detection, Road icing, Bridges, Surface temperature, Damage, Measuring instruments, Wind factors, Humidity, Air temperature, Microwaves.

41-3511
Electric-arc welding under northern conditions. [Elektrodugovaia svarka konstruktsii v severnom ispolnenii],
Larionov, V.P., Novosibirsk, Nauka, 1986, 256p., In Russian with abridged English table of contents enclosed. 392 refs.
Frost action, Steel structures, Welding, Brittleness, Steels, Cold weather construction.

41-3512
Modeling of processes in landscape-geochemical systems. [Modelirovanie protsessov v landshaftno-geokhimicheskikh sistemakh],
Sysuev, V.V., Moscow, Nauka, 1986, 301p., In Russian with abridged English table of contents enclosed. Refs. p.287-299.
Mathematical models, Geography, Soils, Landscape types, Environments, Heat transfer, Mass transfer, Freeze thaw cycles, Forest fires.

41-3513
Remote sensing methods of studying natural resources of Siberia. [Distantsionnye issledovaniia prirodnykh resursov Sibiri],
Sharapov, V.N., ed, Novosibirsk, Nauka, 1986, 192p., In Russian. For selected papers see 41-3514 through 41-3521. Refs. passim.
Subarctic landscapes, Spaceborne photography, Photointerpretation, Measuring instruments, Landscape types, Mapping, Snow surveys, Monitors, Naleds.

41-3514
Spaceborne photography methods of monitoring geosystems in the new economic development areas of Siberia. [Aerokosmicheskie fotometody geosistemnogo monitoringa v raionakh novogo osvoeniia Sibiri],
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Mapping, Subarctic landscapes, Spaceborne photography, Surveys, Monitors, Photointerpretation, Landscape types, Subpolar regions.

41-3515
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41-3516
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41-3517
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Geological surveys, Geocryology, Mapping, Landscape types, Charts.

41-3518
Applying satellite information to studying distribution of discontinuous permafrost (the case of the Aldan Plateau). [Izuchenie raionov preryvistogo rasprostraneniia mnogoletnemerzlykh porod s primeneniem aerokosmicheskoi informatsii (na primere Aldanskogo ploskogor'ia)],
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Shats, M.M.
Permafrost distribution, Discontinuous permafrost, Spaceborne photography, Photointerpretation.

41-3519
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Nival relief, Glacial erosion, Hydrothermal processes, Pereletoks, Nivation.

41-3520
Distribution of ground water naleds in the central BAM zone (from spaceborne photographs). [Rasprostranenie naledei podzemnykh vod v tsentral'noi chasti zony BAMa (po materialam aerokosmicheskogo fotografirovaniia)],
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Snow surveys, Remote sensing, Spaceborne photography, Photoin[illegible]rpretation, Naleds, Mapping.

41-3521
Satellite metho[illegible] of studying naleds in the central and western parts of the BAM zone. [Aerokosmicheskie metody issledovaniia naledei tsentral'nogo i zapadnogo uchastkov zony BAMa],
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Naleds, Aerial surveys, Remote sensing, Geocryology, Spaceborne photography, Photointerpretation, Meteorological factors.

41-3522
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41-3524
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Glacier ice, Ice dams, Glacier surges, Argentina—Río del Plomo.

41-3528
Avalanche measuring sites and the avalanche measuring station on Innsbruck Nordkette. [Lawinenmessfelder und die Lawinenmessstation auf der Innsbrucker Nordkette],
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41-3529
China expands research in frozen ground: a report of the third Chinese conference on permafrost.
Péwé, T.L., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1986, 22(1), p.89-95, 9 refs.
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41-3530
They tow icebergs.
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Iceberg towing, Labrador Sea.

41-3531
Antarctic science.
Walton, D.W.H., ed, Cambridge, Cambridge University Press, 1987, 280p., Includes an introduction by Vivian Fuchs. Bibliography p.272-273. For individual papers see A-35627, B-35628, F-35629, I-35630 and M-35631, or 41-3532.
DLC G860.A555 1987
Research projects, History, International cooperation, Antarctica.
The book attemps to put Antarctica into a general perspective, responding to the recent upsurge of interest in the region at the UN and within other international organizations. Authors of the individual parts have selected for discussion some of the most significant developments in their special areas of expertise during the past 25 years when antarctic scientific research blossomed. These areas include geography, politics and science; life in a cold environment; antarctic ice and rocks; the antarctic atmosphere; and science, the Treaty and the future.

41-3532
Antarctic ice and rocks.
Doake, C.S.M., Antarctic science, D.W.H. Walton, ed., Cambridge, Cambridge University Press, 1987, p.138-189, 18 refs. (p.273).
DLC G860.A555 1987
Sea ice, Ice sheets, Algae, Climate, Tectonics.
Ice in its various forms is examined and its effects on global climate are reviewed. The dominant role of ice i[illegible]" aspects of antarctic life is emphasized. Statistically, the a[illegible]ice sheet is awesome: it covers an area of about 14 million[illegible] km, 1.5 times the size of the US, has an average thickness o[illegible] maximum 5 km, and contains 90% of the world's fr[illegible] Drilling and analysis of ice cores are discussed to sho[illegible] data reflect global climate and pollution histories.
ic history of Antarctica is traced to Gondwana and [illegible]ment is made of the availability of non-living natural resources in the region. Regarding icebergs as a natural resource and towing them to arid regions as a fresh water source, the comment is made that "It is most unlikely that an iceberg, however well protected from the warm ocean..., would manage to cross the equator crackling away in anything other than a glass of gin."

41-3533
Contemporary methods in antarctic cartography. [Sovremennye metody kartografirovaniia Antarktidy],
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Savel'ev, B.I.
Mapping, Ice volume, Ice surveys, Flow rate.
An evaluation is given of traditional as well as new aerial photography methods and instrumentation used in antarctic cartography. The maps are also discussed with regard to their scale, accuracy, type of projection and methods of indicating geographical and topographical features, including ice volume, flow rate and surface elevations. Ways in which satellite photography can be used in the Antarctic, and programs designed to exploit these capabilities, are examined.

41-3534
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Dubinchuk, V.T., ed, Moscow, 1985, 259p., In Russian. For selected summaries see 41-3535 through 41-3538.
Isotope analysis, Oxygen isotopes, Ice composition, Ice structure, Sea ice distribution, Infrared photography, Paleoclimatology, Paleoecology, Geocryology, Glaciology.

41-3535
Prospects for using oxygen isotope determinations in paleogeocryological reconstructions. [Perspektivy ispol'zovaniia izotopno-kislorodnykh opredelenii pri paleomerzlotnykh rekonstruktsiakh],
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Esikov, A.D.
Paleoclimatology, Paleoecology, Permafrost distribution, Ground ice, Oxygen isotopes, Isotope analysis, Ice composition, Impurities.

41-3536
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Esikov, A.D., Poliakov, V.A.
Ground ice, Ice formation, Ice composition, Isotope analysis, Oxygen isotopes, Heavy water.

41-3537
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Kritsuk, L.N., et al, Izotopy v gidrosfere (Tezisy dokladov 2-go Vsesoiuznogo simpoziuma, Kamenets-Podol'skii, May 27-31, 1985) (Isotopes in the hydrosphere (summaries of reports presented at the 2nd All-Union symposium, Kamenets-Podol'skiy, May 27-31, 1985)) edited by V.T. Dubinchuk, Moscow, 1985, p.142-143, In Russian.
Poliakov, V.A.
Permafrost structure, Ground ice, Isotope analysis, Geocryology, Oxygen isotopes, Ice composition, Heavy water.

41-3538
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Pleistocene, Oceanography, Glaciology, Oxygen isotopes, Ice composition, Heavy water.

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Chernov, IU.E., ed, Vilenkin, B.IA., ed.
Cryogenic soils, Soil formation, Soil microbiology, Alpine landscapes, Arctic landscapes, Tundra, Forest tundra, Polar regions.

41-3540
Peculiarities of microbe associations in the Far North and Pamir highlands. [Osobennosti mikrobnykh soobshchestv Kraĭnego Severa i vysokogorii Pamira],
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41-3541
Stability of forest ecosystems at their northern limit of distribution. [Ustoichivost' lesnykh ekosistem na severnom predele ikh rasprostraneniia],
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Shores, Forest tundra, Forest lines, Soil erosion, Water erosion, Wind erosion, Mosses, Lichens, Polar regions, Arctic Ocean.

41-3542
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41-3544
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41-3545
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Abrasion, Trenching, Frozen ground strength, Drilling, Excavation, Drills, Equipment, Classifications.

41-3546
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Galimullin, V.A.
Frost penetration, Frozen ground strength, Excavation, Equipment, Clays, Clay soils, Sands, Ground thawing.

41-3547
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41-3548
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41-3549
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41-3551
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41-3552
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41-3553
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Ice pressure, Ice surface, Ice conditions, Stresses, Panels, Measuring instruments, Monitors, Fast ice, Artificial islands, Beaufort Sea.

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Banks (waterways), Erosion, Continuous permafrost, River ice, Ice breakup, Ice wedges, Deltas, Snowmelt, Hydrodynamics, Thermal effects, United States—Alaska—Colville River.

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Olsen, H.C.
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41-3557
Ice flow over a bed of simple form: experiment, modeling, parametrization of friction. [Ecoulement de la glace sur un lit de forme simple: expérience, modélisation, parametrisation du frottement],
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Glacier flow, Ice friction, Ice mechanics, Viscous flow, Experimentation, Mathematical models.

41-3558
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Ice conditions, Sea ice distribution, Air temperature, Shores.

41-3559
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Climatic changes, Temperature variations, Water temperature, Polar regions.

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41-3563
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Ferguson, R.I.
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Moraines, Patterned ground, Algae, Mosses, Antarctica—Prince Olav Coast, Antarctica—Showa Station.
The flora and geographical distribution of mosses in the Showa Station area were studied for about 20 years. The following aspects were realized in the relationships between the moss species and their distribution. *Bryum pseudotriquetrum* and *Ceratodon purpureus* are distributed throughout the area of Showa Station and its vicinity; *Bryum argenteum* and *Pottia heimii* occur more frequently on the Prince Harald Coast than on Prince Olav Coast; *Pottia austro-georgica* is found only on Prince Harald Coast and *Grimmia lawiana* is more abundant on Prince Olav Coast. The depth of moss turfs was measured in some areas of both coasts. Some of the environmental conditions in an area usually have a great influence upon the depth of moss turfs. The topographic and ecological features are described on the moss vegetation at "Magoke Point" of Skallen region, Prince Harald Coast. The moss community in Cape Ryugu, Prince Olav Coast is phytosociologically elucidated and the vegetation is classified into five communities as follows: *Grimmia lawiana* Sociation, *Grimmia lawiana-Ceratodon purpureus* Sociation, *Ceratodon purpureus* Sociation, *Ceratodon purpureus-Bryum pseudotriquetrum* Sociation and *Bryum pseudotriquetrum* Sociation. Two types of patterned grounds associating with moss vegetation were found in the moraine zone of Cape Ryugu and their ecological effects are considered. (Auth.)

41-3568
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Microbiology, Human factors, Soil pollution, Fungi, Antarctica—Showa Station.
Microbiological investigations of human pollution were conducted at Showa Station. The following results were obtained from 68 sampling sites: *E. coli* was not found but other bacteria, actinomycete, and fungi were detected. The number of bacteria, actinomycete, and fungi increased near the station. Four hundred and fifty-two strains isolated from soil specimens consisted of 86.7% of gram positive bacteria and 13.3% of gram negative bacteria. Most of the bacteria belonged to *Coryne bacterium-Rothia* group, *Bacillus*, *Pseudomonas*, and *Micrococcus*. Most of the fungi were shown to belong to *Cladosporium* and *Penicillium*. The other genera were few. The bacteria were grown at 4-18 C, but some bacteria, 19% of the isolates, were able to grow at 37 C. (Auth.)

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Sea water, Water temperature, Surface temperature, Remote sensing, Clouds (meteorology), Meteorological data, Pollution.

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Pingos, Geomorphology, Karst, Hydrogeology, Topographic features, France—Devès.

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41-3579
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41-3585
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41-3586
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41-3589
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41-3590
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41-3591
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Ice sheets, Surface structure, Topographic features, Spaceborne photography, Antarctica.
Apparent ice-surface topography is observed at several scales on Landsat multi-spectral scanner (MSS) imagery. Digitally enhanced MSS scenes from Antarctica and Nordaustlandet, Svalbard, are compared with ice-surface elevations from aircraft altimetry to show that this apparent topography is real. On Byrd Glacier, Antarctica, apparent "flow lines" coincide with ridges on altimetric records. Synoptic Landsat data, calibrated by information from aircraft altimetric flight lines, are used to classify the surface roughness of the ice caps on Nordaustlandet and 40% of the antarctic ice sheet. On Nordaustlandet, and roughest ice is of amplitude 15-25 m and wavelength 3-4.5 km. Drainage basins with such rough surface characteristics may be associated with ice streams or possibly past surge activity. The roughest antarctic terrain is up to 60 m in amplitude, with wavelengths of < 10 km. The roughness of the antarctic ice sheet increases with distance from ice divides, reflecting changes in the parameters affecting the transfer of basal stresses to the ice surface. (Auth.)

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41-3599
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41-3608
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41-3612
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41-3615
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41-3616
Remnants of the Pleistocene ice sheets in the permafrost zone as an object for paleoglaciological research.
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41-3617
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41-3618
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Ground ice, Ice composition, Ice structure, Layers, Origin.

41-3619
Geological conditions for the burial of Pleistocene glacier ice on the Yenisey.
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Ground ice, Glacier ice, Moraines, Hydrothermal processes, Ice deterioration, Thermokarst, Pleistocene.

41-3620
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41-3621
Climate and ground ice in the north of Western Siberia in the Late Pleistocene and Holocene.
Danilov, I.D., et al, *Polar geography and geology*, Oct.-Dec. 1986, 10(4), p.303-308, For Russian original see 41-106. 6 refs.
Polyakova, E.I.
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41-3622
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41-3623
Coastal processes along the west coast of Yamal.
Smirnov, V.M., *Polar geography and geology*, Oct.-Dec. 1986, 10(4), p.317-321, For Russian original see 41-887. 6 refs.
Shores, Subsea permafrost, Slope processes, Thermokarst, Shore erosion, Shoreline modification, Permafrost structure, USSR—Kara Sea.

41-3624
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41-3625
Formation of the relief and deposits in areas of present-day glaciation on Severnaya Zemlya.
Makeev, V.M., et al, *Polar geography and geology*, Oct.-Dec. 1986, 10(4), p.331-338, For Russian original see 40-3311. 9 refs.
Bol'shianov, D.IU.
Mountain glaciers, Periglacial processes, Moraines, Glacial erosion, Ground ice, Ice structure, Glacier beds.

41-3626
Sea ice concentration assessed from aerospace imagery.
Aleksandrov, V.IU., et al, *Soviet journal of remote sensing*, 1986 (Pub. Feb. 1987), 5(2), p.181-189, Translated from Issledovanie Zemli iz kosmosa. 5 refs.
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Sea ice distribution, Drift, Spaceborne photography, Photointerpretation, Mapping, Charts.

41-3627
Preparation and description of a research geophysical borehole site containing massive ground ice near Fairbanks, Alaska.
Delaney, A.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1987, SR 87-07, 15p., ADA-183 186, 4 refs.
Permafrost physics, Ground ice, Boreholes, Geophysical surveys, Soil temperature, United States—Alaska—Fairbanks.
A geophysical control site consisting of 27 holes drilled in permafrost and cased with ABS pipe has been completed near the USACRREL permafrost tunnel at Fox, Alaska. The site provides excellent control on a range of material types in permafrost terrain including frozen silt, gravel, bedrock, and all common ground-ice types such as wedge, lens, and pore ice. The holes delineate massive ground-ice features of which there is no surface manifestation. Ground temperature data is available from a small-diameter glycol-filled hole. This report describes the site, its preparation, and the soil logs and data obtained.

41-3628
Formation of a two-phase zone during the crystallization of a mixture in a porous medium.
Entov, V.M., et al, *Soviet physics. Doklady*, May 1986, 31(5), p.447-449, Translated from Akademiia nauk SSSR. Doklady, 1986, vol.288. 6 refs.
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Stefan problem, Porous materials, Liquids, Freezing.

41-3629
Breaking of ice during impact interactions.
Epifanov, V.P., *Soviet physics. Doklady*, Sep. 1985, 30(9), p.799-801, For Russian original see 40-1212. 4 refs.
Ice physics, Ice strength, Impact strength, Models, Ice cover, Laboratory techniques, Test equipment.

41-3630
Surface chlorophyll *a* distribution in marginal ice zone in Antarctica, 1984/85.
Fukuda, Y., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.44, Symposium on Polar Biology, 8th, 1985. Proceedings, p.24-33, 9 refs.
Ohno, M., Fukuchi, M.
Algae, Sea ice, Ice composition, Ice cover effect, Ice edge.
Chlorophyll *a* concentrations of surface layer were measured at 108 stations in waters south of 63 S, including the pack ice and the fast ice regions along the course of the *Shirase* during the 1984-85 austral summer where high chlorophyll *a* concentration was observed between late Dec. and early Jan. This high value seems to be related to the release of ice algae which proliferated at the bottom part of the sea ice. In ice-free areas, chlorophyll *a* concentration decreased abruptly and became low. After two or three months, the high concentration of chlorophyll *a* was observed again within Lützow-Holm Bay and Breid Bay. The growth of the planktonic algae seems to occur in these regions during the austral summer. (Auth.)

41-3631
Photosynthetic nature of ice-algae under fast ice near Syowa Station, Antarctica.
Satoh, H., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.44, Symposium on Polar Biology, 8th, 1985. Proceedings, p.34-42, 24 refs.
Watanabe, K.
Algae, Ice edge, Photosynthesis, Ice cover effect, Sea ice, Pack ice, Fast ice, Antarctica—Showa Station.
The photosynthetic nature of the ice-associated microalgal assemblages (ice-algae) was investigated in the annual sea ice area near Showa Station. Results demonstrate the low-light-adaptation of ice-algae under the exceedingly low light conditions, which are largely controlled by the thickness of snow covering the fast ice as well as by solar radiation. The optimum temperature for photosynthesis of the ice-algae was about 8 C, while the rates of photosynthesis decreased at higher temperatures. (Auth. mod.)

41-3632
Experimental decomposition of particulate organic matter collected under the fast ice in Lützow-Holm Bay, Antarctica, with special reference to the fate of carbon, nitrogen and phosphorus.
Matsuda, O., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.44, Symposium on Polar Biology, 8th, 1985. Proceedings, p.55-66, 20 refs.
Ishikawa, S., Kawaguchi, K.
Algae, Sea ice, Fast ice, Ice cover effect, Ice edge, Antarctica—Lützow-Holm Bay.
To estimate the *in situ* degradation, decomposition experiments of various kinds of particulate matter collected under the fast ice near Showa Station were conducted at -1.5 C from Feb. to Oct. 1984. The variations of Chl. *a*, carbon, nitrogen, phosphorus and oxygen consumption were particularly noted. Among the samples, particulate materials obtained by sediment traps set under the fast ice showed the most active decomposition compared with net plankton and surface sediment. In the decomposition of trapped sediment, two steps of first order reaction are given. Results indicate a fairly fast *in situ* decomposition of particulate organic matter under the fast ice. (Auth. mod.)

41-3633
Overwintering strategy of antarctic krill *(Euphausia superba* Dana) under the coastal fast ice off the Ongul Islands in Lützow-Holm Bay, Antarctica.
Kawaguchi, K., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.44, Symposium on Polar Biology, 8th, 1985. Proceedings, p.67-85, 25 refs.
Ishikawa, S., Matsuda, O.
Fast ice, Marine biology, Antarctica—Lützow-Holm Bay.
During the BIOMASS study of the SIBEX (1984/85), some aspects of overwintering strategies of antarctic krill were studied in the Kita-no-ura Cove in Lützow-Holm Bay. Krill were collected monthly with a light trap from May through early Nov. 1984. Krill under the coastal fast ice survive the food deficient antarctic winter principally by the following strategies: changing their habitat from the pelagic to the benthopelagic during the dark period to subsist on detritus on the sea bed; lowering their oxygen consumption rate down to the level of 0.27 ml/g dry wt/h. They show positive phototaxis, swim actively in the darkness, and probably extend their food retention time in the gut in late fall and early winter. Their C and N composition, C:N ratio and fatness are supposed to be mainly effected by the change in metabolic rate and reflect their nutritional condition. The difference in metabolic dynamics of krill between fall and winter to early spring period was recognized through the seasonal change in C and N composition. (Auth.)

41-3634
Sea ice meiofauna at Syowa Station, Antarctica.
Hoshiai, T., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.44, Symposium on Polar Biology, 8th, 1985. Proceedings, p.118-124, 6 refs.
Tanimura, A.
Sea ice, Cryobiology, Ice cores, Antarctica—Showa Station.
Meiofauna composed mainly of copepods, larvae of some invertebrates and occasionally a ciliate in the bottom layer of the sea ice was observed in the vicinity of Showa Station. The copepods that appeared were *Paralabidocera antarctica*, three species of harpacticoid, *Ctenocalanus vanus, Oithona similis* and *Oncaea curvata* in the order of abundance. *P. antarctica* and harpacticoid species occurred continuously throughout the winter season. The maximum abundance of copepods was 218,000/sq m in Sep. 1975. The yearly fluctuation of their abundance was remarkable. *P. antarctica* grew in the sea ice possibly feeding on ice algae. The ecological relation of harpacticoid species to the sea ice was not clear but a close relationship was presumed. *C. vanus, O. similis* and *O. curvata* seemed to be temporal constituents of the meiofauna. (Auth.)

41-3635
Snow algal blooms and their habitat conditions observed at Syowa Station, Antarctica.
Ishikawa, S., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.44, Symposium on Polar Biology, 8th, 1985. Proceedings, p.191-197, 9 refs.
Matsuda, O., Kawaguchi, K.
Algae, Meltwater, Colored snow, Antarctica—Showa Station.
Correlations between snow algal blooms and their habitat conditions were studied at Showa Station in the austral summer of 1984. The study site was under artificial eutrophication by the nutrients derived from seal carcasses. Snow algal blooms occurred abundantly in the places where the meltwater was staying and permeating, and in the upper and under layers of the surface of unconformity where the meltwater was flowing down, but they were not always abundant around the seal carcasses. The concentrations of chlorophyll-*a* showed significant correlations with those of phosphate-P and ammonium-N. (Auth.)

41-3636
Soil nutrient condition related to the distribution of terrestrial algae near Syowa Station, Antarctica.
Akiyama, M., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1986, Special issue No.44, Symposium on Polar Biology, 8th, 1985. Proceedings. p.198-201, Extended abstract. 2 refs.
Ohyama, Y., Kanda, H.
Algae, Soil composition, Antarctica—Showa Station.
Examination of the relation between water content and nutrients and the terrestrial epipsammic algae and coexisting free living algae in the soil is reported, using 4 sets of soil samples collected in the vicinity of Showa Station. In the lake shore samples, a positive correlation between water content and chlorophyll concentration in the soil was observed. Concentration of chlorophyll *a* which was derived mainly from epipsammic algae and negligibly from free living algae was high in the soaked soil and decreased in the dry soil distant from the water body. The number of the free living algae mainly comprising Chlorophyceae and Xanthophyceae was large at the station close to the shore line and decreased in the dry soil distant from the shore. Soil samples obtained from areas including Adélie penguin rookeries showed that chlorophyll concentration was high in the eutrophicated soil around the rookery compared with the intact soil of East Ongul.

41-3637
Cubic ice from liquid water.
Mayer, E., et al, *Nature,* Feb. 12, 1987, 325(6105), p.601-602, 15 refs.
Hallbrucker, A.
Cubic ice, Water, Liquid phases.

41-3638
Amorphous ice still a puzzle.
Maddox, J., *Nature,* Apr. 30, 1987, 326(6116), p.823.
High pressure ice, Ice structure.

41-3639
Scattering and absorption of visible light by sea ice.
Buckley, R.G., et al, *Nature,* Apr. 30, 1987, 326(6116), p.867-869, 15 refs.
Trodahl, H.J.
Sunlight, Light scattering, Sea ice, Ice optics, Antarctica—McMurdo Sound.
In situ measurements are reported of the diffusive transport of light in the sea ice of McMurdo Sound. This novel experimental method permits the resolution of the depth dependence of the scattering and allows identification of an isotropic top layer, an anisotropic bulk layer and a strongly absorbing algal layer. The anisotropic scattering exerts a strong influence on the radiation field in and under the ice.

41-3640
Borehole evidence for a thick layer of basal ice in the central Ronne Ice Shelf.
Engelhardt, H., et al, *Nature,* May 28, 1987, 327(6120), p.318-319, 11 refs.
Determann, J.
Ice shelves, Ice cover thickness, Boreholes, Antarctica—Ronne Ice Shelf.
Extensive radio-echo sounding (RES) by Robin and others revealed reflections in the central part of the Ronne Ice Shelf at the relatively shallow depth of 100-200 m below surface. The interpretation of these echoes, which varied in strength, was ambiguous, and the possibility of internal reflecting horizons was thoroughly discussed. But after surface elevation measurements by radar altimeter from drifting balloons appeared to fit the presence of thin ice, it was decided to base a thickness map of the Ronne Ice Shelf on these RES echoes. Direct observational evidence from boreholes shows that the total ice thickness is much greater than mapped, and that the shallow RES reflections therefore do come from internal horizons. (Auth.)

41-3641
Water masses and currents of the southern ocean at the Greenwich Meridian.
Whitworth, T., III, et al, *Journal of geophysical research,* June 15, 1987, 92(6), p.6462-6476, 51 refs.
Nowlin, W.D., Jr.
Ocean currents, Sea water, Drake Passage, Antarctica—Weddell Sea.
The frontal structure of the Antarctic Circumpolar Current (ACC) at the Greenwich Meridian is similar to that at Drake Passage even though the current is not confined to flow between two continents: there are sharp horizontal gradients in all properties throughout the water column, the fronts are narrow relative to the total width of the current, and most of the transport occurs within the frontal zones. East of Drake Passage, saline North Atlantic Deep Water (NADW) is incorporated into the Circumpolar Current, and at the Greenwich Meridian it influences the water characteristics as far south as the Polar Front. Transport within the ACC at our section is about 20% greater than at Drake Passage, probably due in part to the addition of NADW. Separating the ACC from the Weddell Gyre is a sharp front, south of which the signature of all but the densest Circumpolar Deep Water (CDW) is lost by mixing with the surface waters. The intermediate water of the central Weddell Gyre is formed from this dense CDW, which is modified by biochemical processes to become oxygen poor and nutrient rich. Warm, salty, less dense CDW from the southern edge of the ACC rounds the eastern end of the gyre and appears in the southern limb, which meanders around Maud Rise. (Auth.)

41-3642
Random discontinuous model of sea ice motion.
Thorndike, A.S., *Journal of geophysical research,* June 15, 1987, 92(C6), p.6515-6520, 5 refs.
Sea ice, Ice cracks, Ice models.

41-3643
Microwave radiometer weather-correcting sea ice algorithm.
Walters, J.M., et al, *Journal of geophysical research,* June 15, 1987, 92(C6), p.6521-6534, 12 refs.
Ruf, C., Swift, C.T.
Remote sensing, Radiometry, Microwaves, Sea ice.

41-3644
Effects of free water on snow gliding.
McClung, D.M., et al, *Journal of geophysical research,* June 10, 1987, 92(B7), p.6301-6309, 23 refs.
Clarke, G.K.C.
Snow slides, Snow mechanics, Wet snow, Rheology.

41-3645
Pressure-induced phase transformations in ice.
Tse, J.S., et al, *Physical review letters,* Apr. 20, 1987, 58(16), p.1672-1675, 15 refs.
Klein, M.L.
Ice structure, Ice density, Phase transformations.

41-3646
Conditions associated with frost action in rocks: a field and laboratory investigation.
Hare, M.J., Ottawa, Ontario, Carleton University, 1985, 168p., National Library of Canada. Canadian Theses Division. Microfiche No.0-315-22207-7, M.A. thesis. Refs. p.157-168.
Frost action, Frozen rocks, Frost shattering, Soil freezing, Moisture, Temperature effects, Climatic factors, Tensile properties, Rock mechanics, Frost penetration.

41-3647
Observations and predictions of frost heave around a chilled pipeline.
Dallimore, S.R., Ottawa, Ontario, Carleton University, May 13, 1985, 110p., National Library of Canada. Canadian Theses Division. Mircofiche No.0-315-22213-1, M.A. thesis. Refs. p.105-110.
Frost heave, Permafrost physics, Underground pipelines, Frozen ground mechanics, Freeze thaw cycles, Deformation, Ice lenses, Forecasting, Soil freezing.

41-3648
Fortran subroutines for zero-phase digital frequency filters.
Albert, D.G., *U.S. Army Cold Regions Research and Engineering Laboratory,* Mar. 1986, SR 86-04, 26p., ADA-168 855, 4 refs.
Filters, Computer programs, Design, Analysis (mathematics).
This report describes and gives user instructions for a series of FORTRAN subroutines that can be used to design and apply zero-phase frequency filters to digitized data. The general properties of these filters are discussed and complete listings are presented.

41-3649
Ground waters in southern West Siberia (Formation and problems of rational utilization). [Podzemnye vody iuga Zapadnoĭ Sibiri (Formirovanie i problemy ratsional'nogo ispol'zovaniia)],
Nikolaev, V.A., ed, Novosibirsk, Nauka, 1987, 166p., In Russian. For selected papers see 41-3650 and 41-3651. Refs. passim.
Hydrogeology, Geomorphology, Geologic processes, Hydrothermal processes, Permafrost distribution, Permafrost hydrology, Cryogenic soils, Frozen rocks, Unfrozen water content. Maps, Profiles.

41-3650
Peculiarities of ground water formation in the zone of exogenic processes of the West Siberian plateau. [Osobennosti formirovaniia podzemnykh vod zony gipergeneza Zapadno-Sibirskoĭ plity],
Smolentsev, IU.K., et al, Podzemnye vody iuga Zapadnoĭ Sibiri (Formirovanie i problemy ratsional'nogo ispol'zovaniia) (Ground waters in southern West Siberia (Formation and problems of rational utilization)) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1987, p.4-65, In Russian. Refs. p.60-65.
Kuskovskiĭ, V.S.
Maps, Hydrogeology, Cryogenic soils, Unfrozen water content, Geologic processes, Geomorphology, Permafrost distribution, Permafrost hydrology, Taliks, Profiles, Frozen rocks, Climatic factors, Continuous permafrost.

41-3651
Regime-forming factors in ground water formation in the southern Tyumen' Region. [Rezhimoobrazuiushchie faktory v formirovanii gruntovykh vod iuzhnoĭ chasti Tiumenskoĭ oblasti],
Soloboeva, L.A., Podzemnue vody iuga Zapadnoĭ Sibiri (Formirovanie i problemy ratsional'nogo ispol'zovaniia) (Ground water in southern West Siberia (Formation and problems of rational utilization)) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1987, p.131-136, In Russian. 4 refs.
Hydrogeology, Soil water migration, Seasonal freeze thaw, Frost penetration, Snow cover effect, Snow depth, Snow water equivalent.

41-3652
Ice dams for protecting water areas of northern ports. [Ledianaia damba dlia ograzhdeniia akvatoriĭ severnogo porta],
Bogoslovskiĭ, P.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1987, No.1, p.78-80, In Russian. 3 refs.
Sobol', S.V., Fevralev, A.V.
Estuaries, Ice (construction material), Ports, Ice dams, Polar regions.

41-3653
Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology.
Kawaguchi, S., ed, *Tokyo, National Institute of Polar Research. Memoirs,* Dec. 1986, Special issue No.45, 113p., Refs. passim. For individual papers see F-35690 through F-35697 and I-35686 through I-35689, or 41-3654 through 41-3662.
Watanabe, O., ed.
Meetings, Glaciology, Meteorology, Oceanography.
The Eighth Symposium on Polar Meteorology and Glaciology was held in Tokyo on Dec. 11-12, 1985. The research areas covered were: atmospheric constituents and aerosols, radiation, sea ice and physical oceanography, atmospheric circulation and climate, ice sheet and snow cover, snow crystals, atmospheric boundary layer and instrumentation. A total of 61 papers were presented and the present volume contains 12 full-length papers and 29 abstracts; the full-length papers are arranged in the order of scientific areas of meteorology, glaciology and physical oceanography. (Auth.)

41-3654
Descending motion of antarctic stratospheric aerosol layer in winter: possible effect on stratospheric water vapor budget.
Iwasaka, Y., *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.13-18, 16 refs.
Aerosols, Water vapor, Stratosphere, Antarctica—Showa Station.
Lidar measurements at Showa Station revealed that the centroid of aerosol layer descended at the rate of 0.8 mm/s during winter. If this motion is a substantial movement of aerosol particles, the mass of water transported into the troposphere is about 50,000,000 t/winter, and the antarctic winter stratosphere is an important sink of stratospheric water vapor. If it is a downward air motion carrying small ice crystals, the value is reduced to 50,000 t/winter. (Auth.)

41-3655
Growth form of ice crystals grown in air at low supersaturation and their growth mechanism.
Gonda, T., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.30-37, 16 refs.
Sei, T., Wada, M.
Humidity, Ice crystal growth, Antarctica—Mizuho Station.
The morphological instability and the growth mechanism of ice crystals grown in air at -30 C and at supersaturation below 4% have been experimentally studied. Whether ice cystals grown under this condition would develop into long prismatic columns or into thin plates is dependent on the emergence of active screw dislocations on the *0001* or *1010* faces of the crystals. The morphological instability of ice crystals grown in air at low supersaturation is related to the emergence of active screw dislocations near the corners of the *0001* or *1010* faces. From the experimental results, the growth form and the growth mechanism of snow crystals at low supersaturation observed at Mizuho Station are discussed. (Auth.)

41-3656
Morphological features of combination of bullet-type snow crystals observed at Syowa Station, Antarctica.
Iwai, K., *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.38-46, 13 refs.
Snow crystal structure, Snow crystal growth, Antarctica—Showa Station.
Morphological features of combination of bullet-type snow crystals replicated at Showa Station are discussed. Some

stereophotomicrographs are shown. The number of bullets forming the combination was counted. The bullets with five components were the most frequently observed. The maximum number of components was ten. The angles of their crates were measured, and supplementary angles of about 70, 55 and 88 deg were found to be predominant. In addition, 64 and 78 deg angles were found. Apparent pyramidal faces of bullet crystals are not the crystallographic pyramidal faces, *1011*, but are mere skeleton structures. These findings will be important for discussing optical phenomena in the antarctic atmosphere. (Auth.)

41-3657

Concentrations of trace elements in surface snow in the area near Syowa Station, Antarctica.

Nishikawa, M., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.47-55, 18 refs.

Ambe, Y., Chubachi, S.

Snow impurities, Snow composition, Antarctica—Showa Station.

Surface snow samples were collected in the area near Showa Station, with contamination-free technique. Snow samples were melted and filtered with a membrane filter. The filtrates were analyzed by inductively coupled plasma emission spectrometry and by ion chromatography after evaporation preconcentration by a rotary evaporator. Particulate matter trapped on the filter was also analyzed. From comparison of the results with average chemical composition of seawater and earth crust, the origin of elements in the snow was estimated. (Auth. mod.)

41-3658

Step frequency radar for the measurement of sea ice thickness.

Okamoto, K., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.56-65, 11 refs.

Radar, Remote sensing, Ice cover thickness, Sea ice, Data processing, Measuring instruments.

Preliminary experiments have been carried out to test the fundamental functions of the step frequency radar. This radar aims at measuring the thickness of the antarctic sea ice, transmitting 32 different frequencies in a stepwise fashion between 300 and 796 MHz. The radar system includes the following: maximum transmitting power of 400 mW; range resolution about 0.3 m in the air; maximum observable distance without an ambiguity of about 9.1 m in the air; and transmitting and receiving antennas. The experiments in the anechoic chamber prove that this radar system can successfully detect an iron pipe buried in dry sand and an aluminum plate placed under a sand box. It is suggested that an airborne survey of the sea ice thickness will become possible by using the system described. (Auth.)

41-3659

Borehole closure at Mizuho Station, Antarctica.

Kawada, K., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.66-73, 8 refs.

Yoshida, M., Naruse, R.

Boreholes, Ice cores, Drilling, Measurement, Ice creep, Stress strain diagrams, Antarctica—Mizuho Station.

The 400-m deep hole drilled in 1983 at Mizuho Station was used for measurements of the contraction of diameter in 1984. Depth-profiles of the diameter were obtained several times by using a three-contact-points caliper. Relationship between the stress and the strain rate of ice in the borehole was evaluated under the assumption that the strain rate was constant in the early stage of strain below approximately 0.08. Closure rates of the hole at Mizuho Station showed almost the same or slightly higher values than those in the same stress range derived by other investigators. (Auth. mod.)

41-3660

Textures and fabrics of 700-m deep ice core obtained at Mizuho Station, East Antarctica.

Narita, H., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.74-77, 4 refs.

Nakawo, M., Fujii, Y.

Ice cores, Ice crystal size, Grain size, Ice crystal structure, Antarctica—Mizuho Station.

Crystal grain-areas and shape factors of a 700-m deep ice core obtained at Mizuho Station in 1983-1984 were measured from photographs of thin sections taken in cross-polarized light within a month after the core recovery. Also, *c*-axis orientations were examined with sections at selected depths *in situ*. Comparison of the data with those of the Camp Century, Dye III and Byrd Station cores indicated that ice of late Wisconsin might be existing at depth below about 520 m at Mizuho Station. (Auth.)

41-3661

Volume expansion of a 413.5-m Mizuho core after its recovery.

Nakawo, M., *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.78-85, 17 refs.

Ice cores, Ice density, Ice volume, Stress strain diagrams, Antarctica—Mizuho Station.

The density of core samples was measured soon after their recovery, and the measurement was repeated 1, 3, 6 and 27 months later. It was found that the density decreased significantly with time. The decreasing rate increased with depth, and decreased with time. The data have been analyzed on the basis of a stress-strain relationship. (Auth. mod.)

41-3662

Development of an ice core drill for liquid-filled holes.

Suzuki, Y., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1986, Special issue No.45, Proceedings of the Eighth Symposium on Polar Meteorology and Glaciology, p.86-92, 4 refs.

Shimbori, K.

Ice coring drills, Borehole instruments.

Simple tests simulating drilling in a liquid-filled hole were done of an S-type Archimedean core drill, consisting of a drive-unit, a jacket, a shaft with a screw booster and a sweeper, and a barrel. The barrel length was 0.9 m. The tests revealed that the clearance between the jacket and the barrel (which together made up an Archimedean pump) should be a little wider for drilling in a liquid-filled hole than in a dry hole. With a clearance of 7.4 mm, the pump could transport ice chips to the storage space between the booster and the sweeper, where the booster compacted chips by squeezing a large portion of the liquid through the sweeper which was permeable to liquid. The porosity of compacted chips could be as low as 35%. (Auth.)

41-3663

Transportation in regions of new economic development. [Effektivnost' razvitiia transporta v raionakh novogo osvoeniia].

Prokof'eva, T.A., et al, Moscow, Transport, 1986, 208p., In Russian with abridged English table of contents enclosed. 66 refs.

Rozdobud'ko, N.K.

Transportation, Permafrost beneath structures, Natural resources, Economic development, Petroleum industry, Coal, Baykal Amur railroad, Cost analysis.

41-3664

Manual for construction foremen working in the northern construction-climatic zone. [Spravochnik mastera-stroitelia dlia rabot v Severnoĭ stroitel'no-klimaticheskoĭ zone].

Berezovskiĭ, B.I., et al, Leningrad, Stroĭizdat, 1986, 328p., In Russian with abridged English table of contents enclosed. Refs. p.326-328.

Liberman, I.A., Nekliudov, V.S., Targulian, IU.O.

Manuals, Construction, Permafrost beneath structures, Snowdrifts, Snow loads, Residential buildings, Industrial buildings, Ice roads, Snow roads, Earthwork, Foundations, Piles, Concrete structures, Winter concreting.

41-3665

Criteria of concrete frost resistance. [O kriterii morozostoĭkosti betona].

Dvorkin, L.I., *Gidromelioratsiia i gidrotekhnicheskoe stroitel'stvo*, 1986, Vol.14, p.105-109, In Russian. 9 refs.

Concrete freezing, Concrete strength, Frost resistance, Concrete admixtures, Air entrainment, Surfactants, Winter concreting.

41-3666

Technology of opening and completion of water-bearing layers. [Tekhnologiia vskrytiia i osvoeniia vodonosnykh plastov].

Kvashnin, G.P., Moscow, Nedra, 1987, 247p. (Pertinent p.128-138), In Russian with abridged English table of contents enclosed. 19 refs.

Water supply, Drilling, Permafrost, Springs (water).

41-3667

Oceanographic and marine biological data based on the routine observations near Syowa Station between Feb. 1984 and Jan. 1985 (JARE-25).

Matsuda, O., et al, *Japanese Antarctic Research Expedition. JARE data reports*, Mar. 1987, No.121, 21p., 2 refs.

Ishikawa, S., Kawaguchi, K.

Ice edge, Ice breaking, Ice volume, Ice formation, Sea ice, Antarctica—Showa Station.

A three-year program of marine biological investigations in the fast ice area near Showa Station is reported. Water samples for physical and chemical analyses were collected from different depths, between Feb. 18, 1984, and Jan. 6, 1985, at three locations, which are listed and shown on a map. Seasonal variations of ice breakage and formation processes are shown on charts; water temperature, salinity, chemistry and pigment ratio are tabulated. Some data on plankton collected by vertical haul are also presented.

41-3668

Glaciological research program in east Queen Maud Land, East Antarctica, Part 5, 1985.

Ageta, Y., et al, *Japanese Antarctic Research Expedition. JARE data reports*, Mar. 1987, No.125, 71p., 5 refs.

Kikuchi, T., Kamiyama, K., Okuhira, F.

Ice sheets, Ice cores, Ice cover thickness, Snow accumulation, Traverses, Antarctica—Mizuho Station.

JARE-26, 1984-1986, extended the field work of the East Queen Maud Land Glaciological Project. Major activities involved oversnow traverses toward the inland plateau and Sör Rondane Mountains, and ice core drillings to depths of 200 m, 40 m and 100 m. Temperature distributions and variations of diameters of the drill-hole were measured at Mizuho Station using the 700 m hole bored by JARE-24 and -25. Among the data obtained during the traverses, the following are compiled in this report: position, elevation and ice thickness of stations, net accumulation of snow measured by the stake method, and surface meteorological data. The report includes data on the net accumulation of snow and the temperature profiles in a surface snow layer at Mizuho Station.

41-3669

Problems of cloud physics. [Voprosy fiziki oblakov].

Voloshchuk, N.I., ed, Leningrad, Gidrometeoizdat, 1986, 249p., In Russian with English summaries. For selected papers see 41-3670 through 41-3673. Refs. passim.

Cloud physics, Supercooled clouds, Cloud seeding, Mathematical models, Nucleating agents, Ice nuclei, Ice growth, Microstructure.

41-3670

Numerical simulation of the evolution of seeded supercooled stratiform clouds. [Chislennoe modelirovanie evoliutsii pereokhlazhdennykh sloistoobraznykh oblakov podvergnutykh vozdeĭstviiu kristallizuiushchimi reagentami].

Bakhanov, V.P., et al, Voprosy fiziki oblakov (Problems of cloud physics) edited by N.I. Voloshchuk, Leningrad, Gidrometeoizdat, 1986, p.26-41, In Russian with English summary. 22 refs.

Manzhara, A.A.

Mathematical models, Cloud physics, Supercooled clouds, Nucleating agents, Ice nuclei, Cloud seeding.

41-3671

Results of size distribution study of natural ice-forming nuclei using a universal cascade aerosol sampler. [Rezul'taty issledovaniĭ raspredeleniia po razmeram prirodnykh l'doobrazuiushchikh iader s pomoshch'iu universal'nogo kaskadnogo zabornika aerozoleĭ].

Berezinskiĭ, N.A., et al, Voprosy fiziki oblakov (Problems of cloud physics) edited by N.I. Voloshchuk, Leningrad, Gidrometeoizdat, 1986, p.55-63, In Russian with English summary. 12 refs.

Stepanov, G.V., Khorguani, V.G.

Aerosols, Samplers, Sampling, Ice formation, Ice nuclei, Microstructure.

41-3672

Microstructural characteristics of hailstone embryos. [Mikrostrukturnye kharakteristiki zarodysheĭ gradin].

Tlisov, M.I., et al, Voprosy fiziki oblakov (Problems of cloud physics) edited by N.I. Voloshchuk, Leningrad, Gidrometeoizdat, 1986, p.229-237, In Russian with English summary. 12 refs.

Khorguani, V.G.

Aerosols, Nucleating agents, Ice nuclei, Hailstones, Impurities, Bubbles, Ice growth, Ice structure.

41-3673

Concentration, ice-forming and condensational properties of giant aerosol particles in the atmosphere. [Kontsentratsiia, l'doobrazuiushchie i kondensatsionnye svoĭstva gigantskikh aerozol'nykh chastits v atmosfere].

El'mesov, M.S., Voprosy fiziki oblakov (Problems of cloud physics) edited by N.I. Voloshchuk, Leningrad, Gidrometeoizdat, 1986, p.238-248, In Russian with English summary. 19 refs.

Aerosols, Ice formation, Ice nuclei, Condensation nuclei, Particle size distribution.

41-3674

Integrated mechanization of earthwork. [Kompleksnaia mekhanizatsiia zemlianykh rabot].

Degtiarev, A.P., et al, Moscow, Stroĭizdat, 1987, 335p. (Pertinent p.284-318), In Russian with abridged English table of contents enclosed. 23 refs.

Reĭsh, A.K., Rudenskiĭ, S.I.

Earthwork, Construction equipment, Excavation, Frozen ground strength.

41-3675
Tidal power plants. [Prilivnye elektro-stantsii],
Bernshtein, L.B., et al, Moscow, Energoatomizdat, 1987, 296p. (Pertinent p.239-273), In Russian with abridged English table of contents enclosed. 308 refs.
Tides, Ice conditions, Concrete structures, Hydraulic structures, Construction materials, Electric power, Environmental impact, Shores, Design, Buildings, Arctic Ocean, USSR—Kola Peninsula.

41-3676
Control of spring run-off in northern rivers: the ice veil concept.
Lock, G.S.H., *Polar record*, Jan. 1987, 23(145), p.451-457, 18 refs.
Ice dams, Water flow, River flow, Ice formation, Instruments, Equipment.

41-3677
Observation of a giant antarctic tabular iceberg by satellite radar altimetry.
McIntyre, N.F., et al, *Polar record*, Jan. 1987, 23(145), p.458-462, 15 refs.
Cudlip, W.
Mapping, Icebergs, Ice sheets, Radar tracking.
The iceberg reported here was detected in radar altimeter data collected by NASA's Seasat satellite, which operated between July and Oct 1978. By timing the delay between transmission of a radar pulse and receipt of its echo, the instrument measured surface heights along the satellite ground track. For one second averages over the open ocean, the instrument achieved a precision of up to 10 cm; over sea ice, ice sheets and ice shelves precision was much reduced. Using the technique of Thomas and others (1984) to pinpoint crossings of its margins, the iceberg's length along the satellite ground track has been determined to be 111.3 km and moving with a velocity of approximately 2 km per day. Linear extrapolation of the elevations of adjacent sea ice, which is likely to be first year ice with a freeboard of less than 1 m, gives the iceberg's freeboard as 47.1 m and 43.7 m at its northeast and southwest ends, respectively. Minimum and maximum values are 34.7 m and 49.7 m. Using the empirical relation between freeboard and thickness of the Brunt Ice Shelf which has been reported to produce icebergs of comparable height, estimated thickness varying between 232 m and 357 m was obtained.

41-3678
Investigation of ice-forming activity of aerosols of copper acetylacetonate in a supercooled two-phase flow.
Kim, N.S., et al, *Soviet meteorology and hydrology*, 1986, No.2, p.21-24, Translated from Meteorologiia i gidrologiia. 3 refs.
Shkodkin, A.V.
Aerosols, Ice formation, Nucleating agents.

41-3679
Improving the method of calculating constituents of the heat balance of the soil surface.
Konstantinov, A.R., et al, *Soviet meteorology and hydrology*, 1986, No.2, p.62-66, Translated from Meteorologiia i gidrologiia. 5 refs.
Proshutinskaia, T.O.
Soil surveys, Heat balance, Soil temperature, Statistical analysis, Surface temperature, Wind factors, Evaporation, Heat transfer, Turbulent exchange.

41-3680
Drifting of snow in Northern Kazakhstan.
Petropavlovskaia, M.S., et al, *Soviet meteorology and hydrology*, 1986, No.2, p.67-74, Translated from Meteorologiia i gidrologiia. 14 refs.
Kaliuzhnyĭ, I.L.
Snowdrifts, Snowfall, Snow cover stability, Snow retention, Agriculture.

41-3681
Possible role of standing waves in the dynamics of the ice sheet of the Weddell Sea.
Seidov, D.G., et al, *Soviet meteorology and hydrology*, 1986, No.2, p.90-93, Translated from Meteorologiia i gidrologiia. 6 refs.
Dorogokupets, S.A.
Tides, Sea ice, Ice breakup, Polynyas, Floating ice, Water waves, Antarctica—Weddell Sea.
An attempt is made to explain the formation and maintenance of regions of open water (neve air holes in ice) in the Antarctic. It is shown that upon the formation of standing waves in the sea level, solid sea ice cannot exist near the shore. It is assumed that the neve breaks up under the influence of anomeobaric long waves in resonance with the semidiurnal tide. If the neve breaks up, the standing waves prevent the closure of the fractures near the shore, which may develop into large air gaps. (Auth.)

41-3682
Laboratory investigation of the melting of ice by induced convection.
Bogorodskiĭ, V.V., et al, *Soviet meteorology and hydrology*, 1986, No.2, p.94-96, Translated from Meteorologiia i gidrologiia. 2 refs.
Sukhorukov, K.K.
Ice melting, Convection, Laboratory techniques, Ice sheets, Ice water interface, Heat flux, Ice models.

41-3683
Surface windfield over the antarctic ice sheet.
Parish, T.R., et al, *Nature*, July 2-8, 1987, 328(6125), p.51-54, 18 refs.
Bromwich, D.H.
Mapping, Sastrugi, Ice surface, Topographic effects, Wind (meteorology).
The intense radiative cooling of air over the ice slopes of Antarctica generates a surface wind regime that is strongly controlled by topography, and plays a key role in determining the behavior of the atmosphere and ocean in high southern latitudes. Resultant surface winds are intimately linked to the orientation of the ice terrain and display the highest degree of persistence found on Earth. The close coupling between wind and topography allows estimation of the former if the latter is known with some precision. Here we report on time-averaged, near-surface airflow over the antarctic continent during winter diagnosed from a recent, accurate synthesis of terrain slopes and from estimates of the lower atmospheric temperature structure. The simulated drainage pattern exhibits strong spatial variability with the airflow concentrated into several zones near the coastal margin. These confluence regions are responsible for strong persistent katabatic winds over downstream coastal stretches and are indicative of zones of greatest katabatic potential. (Auth.)

41-3684
Phytoplankton in the marginal ice zone of the Greenland Sea during summer, 1984.
Spies, A., *Polar biology*, June 1987, 7(4), p.195-205, Refs. p.204-205.
Biomass, Ice edge, Algae, Ice cover effect, Photosynthesis, Seasonal variations, Ice cover thickness.

41-3685
Sedimentation in Arctic Canada: species composition and biomass of phytoplankton contributed to the marine sediments in Frobisher Bay.
Hsiao, S.I.C., *Polar biology*, June 1987, 7(4), p.245-251, 24 refs.
Biomass, Marine deposits, Suspended sediments, Ice cover effect, Ice cover thickness, Algae, Seasonal variations, Chlorophylls.

41-3686
Observation of "anomalous" spectra of Raman scattering at the water-ice phase transition. [Nabliudenie "anomal'nykh" spektrov kombinatsionnogo rasseianiia sveta pri fazovom perekhode voda-led],
Glushkov, S.M., et al, *Akademiia nauk SSSR. Doklady*, 1986, 291(4), p.836-839, In Russian. 8 refs.
Panchishin, I.M., Fadeev, V.V.
Phase transformations, Water structure, Molecular structure, Light scattering, Spectra, Ice formation, Ice physics, Ice water interface.

41-3687
Operation of power equipment of gas pipelines in western Siberia. [Ekspluatatsiia energeticheskogo oborudovaniia gazoprovodov Zapadnoĭ Sibiri],
Ivanov, V.A., et al, Moscow, Nedra, 1987, 143p., In Russian with abridged English table of contents enclosed. 17 refs.
Krylov, G.V., Rafikov, L.G.
Gas pipelines, Permafrost beneath structures, Cold weather operation, Winter maintenance.

41-3688
Shelf: the relief, sediments and their formation. [Shel'f: rel'ef, osadki, i ikh formirovanie],
Ionin, A.S., et al, Moscow, Mysl', 1987, 205p. (Pertinent p.53-80), In Russian with abridged English table of contents enclosed. Refs. p.196-203.
Medvedev, V.S., Pavlidis, IU.A.
Bottom topography, Ice shelves, Marine deposits, Subsea permafrost.

41-3689
Planet Venus. [Planeta Venera],
Kondrat'ev, K.IA., et al, Leningrad, Gidrometeoizdat, 1987, 278p., In Russian with abridged English table of contents enclosed. 223 refs.
Krupenio, N.N., Selivanov, A.S.
Planetary environments, Atmospheric composition, Water vapor, Cloud cover.

41-3690
Concrete durability.
Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987, American Concrete Institute, ACI SP-100, Detroit, MI, American Concrete Institute, 1987, 2179p. (2 vols.), Refs. passim. For selected papers see 41-3691 through 41-3733.
Scanlon, J.M., ed.
Concrete durability, Freeze thaw cycles, Concrete strength, Chemical ice prevention, Polymers, Meetings, Concrete curing, Concrete freezing, Concrete aggregates, Reinforced concretes, Cracking (fracturing), Damage, Cement admixtures.

41-3691
Importance of the surface layer for the durability of concrete structures.
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Concrete durability, Concrete structures, Freeze thaw cycles, Compressive properties, Porosity, Surface properties, Chemical properties, Frost resistance, Concrete strength, Concrete curing.

41-3692
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Popovics, S., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.131-142, 20 refs.
Concrete durability, Freeze thaw cycles, Concrete aggregates, Concrete structures, Damage, Cracking (fracturing), Abrasion, Chemical properties, Cements, Corrosion.

41-3693
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Whiting, D., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.169-186, 12 refs.
Concrete durability, Concrete strength, Freeze thaw cycles, Concrete admixtures, Concrete curing, Compressive properties, Frost resistance, Air entrainment.

41-3694
Evaluation of durability for concrete in terms of watertightness by "permeability coefficient test results".
Tanahashi, I., et al, Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.187-206, 10 refs.
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Concrete durability, Permeability, Freeze thaw cycles, Water content, Temperature effects, Frost resistance, Water cement ratio, Measuring instruments, Penetration tests.

41-3695
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41-3696
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Ramakrishnan, V., et al, Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.305-321, 7 refs.
Balaguru, P.
Concrete durability, Freeze thaw cycles, Concrete freezing, Frost resistance, Flexural strength, Cements, Dust, Freeze thaw tests, Concrete admixtures.

41-3697
Making more durable concrete with polymeric fibers.
Vondran, G., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.377-396, 9 refs.
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41-3698
Concrete durability in bridges.
Hawkins, M., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.397-421, 6 refs.
Concrete durability, Chemical ice prevention, Bridges, Chemical properties, Damage, Cements, Corrosion, Cost analysis.

41-3699
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Concrete structures, Concrete durability, Underground pipelines, Precast concretes, Freeze thaw cycles, Damage, Abrasion, Cements, Frost weathering, Reinforced concretes.

41-3700
Durability of concrete bridges in Belgium—balance of the systematic inspection.
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Bridges, Concrete durability, Cracking (fracturing), Chemical ice prevention, Damage, Salting, Maintenance, Corrosion.

41-3701
Improvement of concrete durability against intrusion of chloride-laden water by using sealers, coatings and various admixtures.
Marusin, S., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.599-619, 5 refs.
Concrete admixtures, Concrete durability, Chemical ice prevention, Damage, Ions, Tests, Water cement ratio, Countermeasures, Sealing, Coatings.

41-3702
Rapid one-cycle test for evaluating aggregate performance when exposed to freezing and thawing in concrete.
Faulkner, T., et al, Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.705-722, 2 refs.
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41-3703
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Chojnacki, B.
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41-3704
Durability of concrete with a superplasticizing admixture.
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Tham, K., Dransfield, J.
Plastic properties, Concrete durability, Freeze thaw cycles, Permeability, Frost resistance, Concrete strength, Water cement ratio.

41-3705
Durability of high-strength concrete containing a high range water reducer.
Robson, G., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.765-780.
Concrete strength, Concrete durability, Precast concretes, Bridges, Freeze thaw cycles, Concrete admixtures, Water content, Air entrainment.

41-3706
Cracking due to frost action in Portland cement concrete pavements—a literature survey.
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Frost action, Concrete durability, Cracking (fracturing), Freeze thaw cycles, Pavements, Cements, Bibliographies, Concrete aggregates.

41-3707
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Bridges, Concrete durability, Freeze thaw cycles, Damage, Climatic factors, Concrete structures, Snow cover effect, Roads, Design.

41-3708
Frost susceptibility of high-strength concrete.
Philleo, R., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.819-842, 31 refs.
Frost resistance, Concrete durability, Concrete durability, Concrete admixtures, Drying, Water content.

41-3709
Durability of concrete containing fly ash for use in highway applications.
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Concrete admixtures, Concrete durability, Freeze thaw cycles, Bridges, Roads, Rheology, Abrasion, Air entrainment, Flexural strength, Concrete strength.

41-3710
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41-3711
Effect of curing and type of cement on the resistance of concrete to freezing in deicing salt solutions.
Gunter, M., et al, Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.877-899, 10 refs.
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Concrete curing, Concrete durability, Concrete freezing, Frost resistance, Chemical ice prevention, Salting, Freeze thaw tests, Cements, Microstructure, Water cement ratio.

41-3712
Freezing and thawing resistance of concrete containing chloride.
Yamato, T., et al, Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.901-917, 5 refs.
Emoto, Y., Soeda, M.
Frost resistance, Concrete durability, Freeze thaw tests, Air entrainment, Chemical analysis, Concrete admixtures, Sea water, Compressive properties, Freeze thaw cycles.

41-3713
Durability of an arctic concrete.
Regourd, M., et al, Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.1. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.919-933, 9 refs.
Hornain, H., Aitcin, P., Sarkar, S.
Concrete aggregates, Concrete durability, Concrete strength, Cold weather performance, Compressive properties, Damage, Chemical analysis, Climatic factors, Scanning electron microscopy.

41-3714
Durability of concrete under arctic offshore conditions.
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Concrete durability, Cold weather performance, Offshore structures, Freeze thaw cycles, Frost action, Concrete strength, Sea water, Sea ice, Plastic properties, Abrasion, Ice loads, Tests.

41-3715
Theoretical aspect and methods of testing concrete resistance to freezing and deicing chemicals.
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Mikulic, D., Ukraincik, V.
Frost resistance, Concrete durability, Chemical ice prevention, Freeze thaw tests, Concrete strength, Chemical analysis, Damage.

41-3716
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Chojnacki, B., Newell, R.
Freeze thaw tests, Concrete durability, Concrete strength, Cements, Concrete aggregates, Frost resistance, Compressive properties.

41-3717
Durability of fiber reinforced concrete in a severe marine environment.
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41-3718
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Concrete aggregates, Concrete durability, Freeze thaw cycles, Fly ash, Air entrainment, Freeze thaw tests, Chemical ice prevention.

41-3719
Durability of shotcrete.
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41-3720
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Concrete admixtures, Concrete durability, Freeze thaw cycles, Water content, Freeze thaw tests.

41-3721
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Hooton, R., Mukherjee, P., Carmichael, T.
Concrete aggregates, Concrete durability, Frost resistance, Freeze thaw cycles, Fly ash, Air entrainment, Freeze thaw tests, Water cement ratio.

41-3722
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Pigeon, M., et al, Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.2. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.1155-1182, 14 refs.
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Concrete admixtures, Concrete durability, Chemical ice prevention, Scaling, Salting, Water content, Chemical analysis, Air entrainment, Freeze thaw tests.

41-3723
Effects of microsilica and Class C fly ash on resistance of concrete to rapid freezing and thawing and scaling in the presence of deicing agents.
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Freeze thaw tests, Concrete durability, Frost resistance, Fly ash, Damage, Air entrainment, Chemical ice prevention, Water cement ratio, Salting.

41-3724
Methodology of modeling for concrete durability.
Samarin, A., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.2. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.1205-1225, 15 refs.
Concrete aggregates, Concrete durability, Frost resistance, Sea water, Porosity, Reinforced concretes, Corrosion, Hydraulic structures.

41-3725
Durability of concrete containing supplementary cementing materials in marine environment.
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Carette, G., Bremner, T.
Freeze thaw cycles, Concrete durability, Concrete strength, Fly ash, Concrete admixtures, Compressive properties, Cements, Sea water, Air entrainment, Marine atmospheres.

41-3726
Labcrete, realcrete, and hypocrete where we can expect the next major durability problems.
Newman, K., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.2. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.1259-1283, 42 refs.
Concrete structures, Concrete durability, Concrete aggregates, Chemical ice prevention, Salting, Cements, Corrosion, Damage, Design.

41-3727
Aggretate—the decisive element in the frost resistance of concrete.
Teodoru, G., Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.2. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.1297-1310, 12 refs.
Concrete strength, Concrete durability, Freeze thaw tests, Frost resistance, Concrete aggregates, Compressive properties, Tensile properties, Damage, Concrete freezing.

41-3728
Laboratory evaluation of the freezing and thawing durability of marine limestone coarse aggregate in concrete.
Lane, D., et al, Katharine and Bryant Mather International Conference on Concrete Durability, Atlanta, GA, April 27-May 1, 1987. Proceedings, Vol.2. Edited by J.M. Scanlon, Detroit, MI, American Concrete Institute, 1987, p.1311-1323, 4 refs.
Meininger, R.
Freeze thaw tests, Concrete durability, Concrete strength, Freeze thaw cycles, Porosity, Concrete aggregates, Air entrainment, Construction materials, Saturation.

41-3729
Deterioration of aggregates—the underlying causes.
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Freeze thaw cycles, Concrete durability, Concrete aggregates, Salting, Damage, Chemical ice prevention, Freezing points, Porosity, Adsorption.

41-3730
Condition survey of concrete structures built with potentially alkali-reactive limestone aggregates from the Quebec City area (Quebec, Canada).
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Considerations relating to corrosion for use in design of reinforced concrete structures exposed to a marine environment.
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Freeze thaw cycles, Concrete durability, Concrete strength, Damage, Corrosion, Permeability, Reinforced concretes, Sea water, Design.

41-3734
Protection of roads from snow avalanches. [Zashchita avtomobil'nykh dorog ot lavin]
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41-3735
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Railroad tunnels, Frozen ground, Ground thawing, Loads (forces), Stress strain diagrams, Design.

41-3736
Improving the cleaning, hydraulic testing and water expulsion on main pipelines in freezing weather. [Zadachi sovershenstvovaniia ochistki, gidravlicheskikh ispytaniĭ i vytesneniia vody na magistral'nykh truboprovodakh v zimnikh usloviiakh]
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Shipovskii, O.M.
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41-3737
Freezing and thawing of drained peat soils in forests of the central Ural Mountains. [Promerzanie i ottaivanie osushennykh torfianykn pochv v lesakh Srednego Urala]
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Drainage, Organic soils, Peat, Frost penetration, Freeze thaw cycles, Forest soils, Soil water migration, Runoff.

41-3738
Under severe climatic conditions. Special characteristics and problems of the construction of the Novosibirsk subway. [V usloviiakh surovogo klimata. Nekotorye osobennosti i problemy sooruzheniia Novosibirskogo metro]
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41-3739
Antarctic ecosystem.
Benninghoff, W.S., *Environment international*, 1987, 13(1), p.9-14, 24 refs.
Ecology, Ice shelves, Marine biology, Ice sheets, Glaciology.
The antarctic continent is the principal heat sink of the world weather machine. Upwelling areas of the southern ocean recycle nutrients and stimulate the marine ecosystem, and seasonal changes in extent of sea ice contribute to one of the greatest annual pulses in marine organic production. The fish fauna has only 120 species but these belong to 29 families. The zooplankton is rich in several endemic crustacea, notably the antarctic krill. The only vertebrates on land come from the sea onto shore areas and fast ice, including colonies of breeding penguins and associated birds as well as seals. Closed communities of vascular plants and cryptogams occur on subantarctic islands and the Antarctic Peninsula, but in the entire continental Antarctic the vegetation is desert-like, composed of scattered mosses, lichens, and terrestrial algae. Exposed surfaces of crystalline rocks harbor "endolithic microbial life," and a few species of invertebrates dwell on favorably exposed soil and under rocks. The ice plateau is as nearly abiotic or sterile as any area on the earth's surface. The physical and biotic features of Antarctica represent extreme conditions. (Auth. mod.)

41-3740
Antarctic terrestrial ecosystem.
Walton, D.W.H., *Environment international*, 1987, 13(1), p.83-93, Refs. p.92-93.
Microbiology, Human factors, Soil pollution, Waste disposal, Snow impurities, Environmental impact, Environmental protection.
The maritime and continental antarctic terrestrial ecosystems are considered in the context of environmental impacts-habitat destruction, alien introductions, and pollution. Their ability to recover from perturbation is discussed in the light of present scientific knowledge, and the methods used to control impacts are reviewed. It is concluded that techniques of waste disposal are still inadequate, adequate training in environmental and conservation principles for antarctic personnel in many countries is lacking, and scientific investigations may be a much more serious threat than tourism to the integrity of these ecosystems. Some priorities crucial to future management are suggested. (Auth.)

41-3741
Exploitation of antarctic minerals.
Crockett, R.N., et al, *Environment international*, 1987, 13(1), p.121-132, 11 refs.
Clarkson, P.D.
Minerals, Economic development, Sea ice distribution, Environmental protection, Ice shelves.
Exploitation of minerals either from continental shelves or land areas free of ice has yet to take place in the Antarctic. The paper considers pressures, commercial, strategic, and possible depletion of resources elsewhere that might encourage moves

towards exploitation. A brief review is given of technical developments that will be required to allow minerals operators to establish themselves in the hostile antarctic environment. Finally, the issues that arise in the control of mineral exploitation in a region not subject to conventional national authority are noticed and the necessary conditions for the supervision of such activity, and the protection of the antarctic environment are outlined. (Auth.)

41-3742
Experimental study of water-balance elements of mountain catchment areas. [Eksperimental'noe izuchenie elementov vodnogo balansa gornykh vodosborov].
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41-3743
Development of swamps and paluded forests in western Siberia. [Kompleksnoe osvoenie bolot i zabolochennykh lesov Zapadnoĭ Sibiri].
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Sukacheva, V.N.
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41-3744
Forest-tundra and north taiga forests of the Far East. [Predtundrovye lesa Dal'nego Vostoka].
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Tikhmenev, E.A.
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41-3745
Snow cover distribution in a system of young poplar strips. [Snegootlozhenie v sisteme molodykh topolevykh polos].
Zarudnyĭ, I.A.K., *Lesnoe khoziaĭstvo*, 1987, No.1, p.45-46, In Russian. 7 refs.
Forest strips, Microclimatology, Wind factors, Snow cover distribution, Steppes, Soil temperature, Snow depth, Snow retention.

41-3746
Some current problems in geocryology. [Nekotorye aktual'nye problemy geokriologii].
Vtiurin, B.I., et al, Geokriologicheskie i gidrogeologicheskie issledovaniia Sibiri (Geocryological and hydrogeological studies of Siberia), Yakutsk, Yakut. knizhnoe izd-vo, 1972, p.17-25, In Russian. 31 refs.
Vtiurina, E.A.
Ice, Geocryology, Permafrost, Research projects, Lithology, Hydrology, Meteorology.

41-3747
Influence of ground temperature upon the development of ice wedge polygon formations. [Vliianie temperatury gornykh porod na razvitie poligonal'no-zhil'nykh obrazovaniĭ].
Romanovskiĭ, N.N., Geokriologicheskie i gidrogeologicheskie issledovaniia Sibiri (Geocryological and hydrogeological studies of Siberia), Yakutsk, Yakut. knizhnoe izd-vo, 1972, p.33-41, In Russian. 13 refs.
Geocryology, Patterned ground, Polygonal topography, Frozen rock temperature, Permafrost structure, Ice veins, Ice wedges.

41-3748
Subsurface ice in sand alluvium of the Lena River. [Podzemnyĭ led v peschanom alliuvii reki Leny].
Gravis, G.F., et al, Geokriologicheskie i gidrogeologicheskie issledovaniia Sibiri (Geocryological and hydrogeological studies of Siberia), Yakutsk, Yakut. knizhnoe izd-vo, 1972, p.73-79, In Russian. 11 refs.
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41-3749
Sedimentary deposits in the northern lowland plains, Mars.
Lucchitta, B.K., et al, *Journal of geophysical research*, Nov. 30, 1986, 91(B13), p.E166-E174, Refs. p.E174.
Ferguson, H.M., Summers, C.
Rheology, Glacial geology, Extraterrestrial ice, Polygonal topography, Spaceborne photography, Patterned ground, Sediments.
Sinuous ridges at the mouths of Martian outflow channels resemble ridges in antarctic ice streams and ice shelves; the similarity suggests that the Martian material was transported from the southern highlands toward the northern plains, as the antarctic material is transported from the continent toward the adjacent ocean. Overall, it appears that a massive transfer of material took place midway in Martian history, either through the outflow channels or elsewhere along the northern highland scarp, and that this material probably formed the deposits now characterized by polygonal fracture patterns. (Auth. mod.)

41-3750
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41-3751
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Earth dams, Frost protection, Thermal insulation, Frost resistance, Reinforced concretes, Frost penetration, Frost action, Damage, Permeability.

41-3752
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41-3753
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Avalanche mechanics, Fluid dynamics, Avalanche formation, Snow mechanics, Turbulent flow, Models, Particles, Snow depth.

41-3754
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41-3755
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41-3756
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41-3762
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Road icing, Pavements, Remote sensing, Infrared radiation, Backscattering, Ice optics, Colored ice.

41-3764
West antarctic ice streams draining into the Ross Ice Shelf: configuration and mass balance.
Shabtaie, S., et al, *Journal of geophysical research*, Feb. 10, 1987, 92(B2), p.1311-1336, Refs. p.1335-1336.
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Mapping, Crevasses, Ice surface, Glacier mass balance, Ice shelves, Antarctica—West Antarctica.
Mass of the boundaries of the ice streams and their flow bands on the Ross Ice Shelf are presented and discussed. The surfaces of the active ice streams, A and B, are heavily crevassed, but there are no visible crevasses on ice stream C. The existence of numerous crevasses at a depth of about 35 m implies that ice stream C ceased to be active about 250 years ago. There is a complex zone at the head of ice stream B that suggests that ice stream B is currently widening and advancing toward the interior of the ice sheet. To relate surface elevation data from satellite observations to sea level, three geoidal models were tested. It is concluded that the GEM 10C model is the best of the three for this section of Antarctica. The overall net balance of this part of the West Antarctic inland ice is suggestively negative (-23 cu km/yr). From the measured flux into the Ross Ice Shelf and previous measurements, an average basal melt rate from beneath the ice shelf of 0.12 m/yr is calculated. (Auth. mod.)

41-3765
Thermal break-up of frozen cohesive rocks. [Nekotorye osobennosti protsessa termicheskogo razrusheniia merzlykh sviaznykh porod].
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Ground ice, Frozen ground temperature, Cryogenic structures, Frozen rock strength, Frost shattering, Artificial thawing, Cohesion.

41-3766
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Organic soils, Frozen ground, Peat, Drying, Mathematical models.

41-3767
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Rock mechanics, Fracturing, Fracture zones, Cements, Resins, Frost action, Frost protection, Low temperature tests, Laboratory techniques, Mining.

41-3768
Cryogenic preparation of cohesive rocks. [Kriogennaia podgotovka sviaznykh porod],
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Mining, Earthwork, Transportation, Frozen cargo, Cohesion, Soil freezing, Artificial freezing.

41-3769
Determining the state of stress in shaft timbering during thawing. [Opredelenie napriazhennogo sostoianiia krepi stvolov pri ikh razmorazhivanii],
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41-3770
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Stefan problem, Heat transfer, Mathematical models, Mine shafts, Surface temperature, Artificial freezing, Frost penetration, Phase transformations, Soil water migration.

41-3771
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41-3772
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41-3773
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41-3774
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41-3775
Oxygen isotope composition of syngenetic ice wedges (analytical data, problems of paleoclimatic reconstruction). [Izotopno-kislorodnyi sostav singeneticheskikh povtorno-zhil'nykh l'dov (analiticheskie dannye, problemy paleoklimaticheskikh rekonstruktsii)],
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41-3776
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41-3789
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Upwelling, Ice edge, Ocean currents, Floating ice, Wind factors, Mathematical models, Shear flow, Pack ice.

41-3791
Thermomechanical balances of ice sheet flows.
Morland, L.W., *Geophysical and astrophysical fluid dynamics,* 1984, 29(3), p.237-266, 21 refs.
Ice mechanics, Ice thermal properties, Ice sheets, Ice creep, Ice shelves, Mathematical models, Rheology, Viscous flow, Grounded ice, Shear flow.

41-3792
Studying the effect of ground conditions on strength and stability of no-pilework bridge supports exposed to moving ice. [Issledovanie vliianiia gruntovykh uslovii na prochnost' i ustoichivost' bezrostverkovykh mostovykh opor vosprinimaiushchikh ledokhod],
Zhordochko, I.O., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1987, No.3, p.101-104, In Russian. 2 refs.
Kuznetsova, L.F., Galushka, L.S.
Bridges, Supports, Pile structures, Ice loads, Ice floes, Design.

41-3793
Design margins for icebreakers. [Rezervy ledokolov],
Nikolaev, V., *Morskoi flot,* 1987, No.3, p.42-45, In Russian.
Ice navigation, Sea ice distribution, Icebreakers, Ice cover thickness, Design, Ships, Ice breaking, Transportation.

41-3794
Greenland ice-sheet margin—a mine of ice for paleoenvironmental studies.
Reeh, N., et al, *Palaeogeography, palaeoclimatology, palaeoecology,* Mar. 1987, 58(3/4), p.229-234, 13 refs.
Höjmark, H., Thomsen, H.H., Clausen, H.B.
Ice sheets, Ice dating, Ice edge, Ice mechanics, Isotope analysis, Paleoclimatology, Velocity, Ablation, Drill core analysis, Greenland.

41-3795
Nitrogen in two contrasting antarctic bryophyte communities.
Christie, P., *Journal of ecology,* Mar. 1987, 75(1), p.73-93, Refs. p.91-93.
Peat, Meltwater, Microbiology, Snow composition, Mosses, Nutrient cycle, Antarctica—Signy Island.
From Oct. 1978 until Feb. 1980, studies were conducted on the nitrogen inputs and outputs of two contrasting moss-dominated communities on Signy I.: a semi-ombrogenous dry turf and a soligenous wet carpet. The dry turf was more acidic than the wet carpet, had a lower water content than the wet carpet and lower concentrations per unit dry weight of total nitrogen, phos-

phorus and potassium. Accumulated winter snow overlying the dry turf and wet carpet in Oct. 1979 contained 39 and 42 microgram N l, respectively. This snow melted and subsequent snow cover, which has accumulated 4 weeks later, contained 113 and 83 microgram N l, respectively. These higher nitrogen concentrations were probably due to early summer activity by nearby penguins. Melt-water and pools on the surface of the sites in Dec. 1979 contained 230 and 165 microgram N l on the dry turf and wet carpet, respectively. Numbers of sulphate-reducing bacteria *(Desulfovibrio* and *Desulfotomaculum)* and clostridia were very low, even in the wet carpet which contained 150 sulphate-reducers and 290 clostridia (100 g) dry wt peat. Cultures of the cyanobacterium *Nostoc muscorum* from both sites showed high acetylene reduction activity at 15 C. Calculated inorganic nitrogen inputs from biological nitrogen fixation and precipitation (including penguin activity) were 45.9 and 64.1 mg sq m year (dry turf) and 192.4 and 65.1 mg sq m year (wet carpet). (Auth. mod.)

41-3796

Ice accretion on cables of various cross-sections.

Baker, P.C., et al, *IMA journal of applied mathematics*, Jan. 1986, 36(1), p.11-28, 23 refs.

Poots, G., Rodgers, G.G.

Ice accretion, Power line icing, Analysis (mathematics).

41-3797

Lichen distribution along an alpine tundra ridge in the High Uintas of northeastern Utah, U.S.A.

St. Clair, L.L., Boulder, University of Colorado, 1984, 155p., University Microfilms order No. DA848684, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Mar. 1985, p.2791.

Alpine tundra, Lichens, Plant ecology.

41-3798

Elaboration of two methods to investigate unfrozen water movement in a snow-soil environment.

Stein, J., Fairbanks, University of Alaska, 1985, 310p., University Microfilms order No. DA8704876, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, May 1987, p.4455.

Soil water migration, Unfrozen water content, Snow water content, Measurement.

41-3799

Numerical study of the atmospheric radiative transfer process with application to the Arctic energy balance.

Tsay, S.-C., Fairbanks, University of Alaska, 1986, 266p., University Microfilms order No. DA8704877, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, May 1987, p.4555.

Radiation balance, Snow optics, Albedo.

41-3800

Aspect and elevation effects on the structure of the seasonal snowcover in Colorado.

Dexter, L.L., Boulder, University of Colorado, 1986, 250p., University Microfilms order No. DA8706411, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, May 1987, p.4454.

Snow cover distribution, Snow cover structure, Snow water equivalent, Avalanche forecasting, Altitude.

41-3801

Winter weather records relating to potential frost failure of brickwork.

Beardmore, C., et al, *British Ceramic Society. Transactions and journal*, Jan.-Feb. 1987, 86(1), p.7-8.

Ford, R.W.

Bricks, Frost resistance, Freezing, Frost shattering.

41-3802

Studies of the mechanical properties of cross-country skis.

Erkkilä, J., et al, *Acta polytechnica Scandinavica. Applied physics series*, 1986, PH 154, 24p., 7 refs.

Pihkala, P., Rahikainen, A., Spring, E.

Skis.

41-3803

Concrete with A.C.F. admixture for transportation engineering. [Beton s ATsF-dobavkoi dlia transportnogo stroitel'stva].

Solomatov, V.I., et al, Moscow, Transport, 1986, 63p., In Russian. 1 ref.

Takhirov, M.K., Korotin, M.M.

Concrete admixtures, Winter concreting, Concrete placing, Concrete hardening, Frost resistance, Concrete strength.

41-3804

Regional characteristics of urban planning and construction in Siberia and the North. [Regional'nye osobennosti gradostroitel'stva v Sibiri i na Severe].

Alekseeva, T.I., Leningrad, Strojizdat, 1987, 208p., In Russian with abridged English table of contents enclosed. 78 refs.

Urban planning, Municipal engineering, Industrial buildings, Residential buildings, Houses, Roads, Pavements, Prefabrication, Design, Permafrost beneath structures.

41-3805

Regime of glaciers in central Tien Shan. [Rezhim lednikov Tsentral'nogo Tian'-Shania].

Dikikh, A.N., ed, Frunze, Ilim, 1986, 136p., In Russian. For selected papers see 41-3806 and 41-3807. Refs. passim.

River basins, Mountain glaciers, Glacier ice, Ice volume, Alpine landscapes, Slope processes, Landslides, Mudflows, Soil creep, Permafrost distribution, Permafrost hydrology.

41-3806

Water resources of the Sary-Dzhaz river basin. [Vodnye resursy basseina raki Sary-Dzhaz].

Bakov, E.K., Rezhim lednikov Tsentral'nogo Tian'-Shania (Regime of glaciers in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1986, p.3-11, In Russian. 22 refs.

River basins, Ice (water storage), Water reserves, Mountain glaciers, Glacier ice, Ice volume.

41-3807

Mudflows and mud avalanches in eastern parts of central Tien Shan and the Terskey Ala-Tau Range. [Selyevye, oplyvy v vostochnykh chastiakh vnutrennego Tian'-Shania i khrebta Terskei Ala-Too].

Tarakanov, A.G., Rezhim lednikov Tsentral'nogo Tian'-Shania (Regime of glaciers in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1986, p.98-109, In Russian. 12 refs.

Solifluction, Alpine landscapes, Slope processes, Permafrost distribution, Landslides, Mudflows, Origin, Permafrost hydrology.

41-3808

Engineering preparations for construction of Surgut State Regional Electric Power Plant No.2. [Inzhenernaia podgotovka stroitel'stva Surgutskoi GRES-2].

Lutsiuk, I.V., et al, *Energeticheskoe stroitel'stvo*, Apr. 1987, No.4, p.14-17, In Russian.

Safroniuk, A.A., Alant'ev, M.V.

Electric power, Site surveys, Permafrost beneath structures, Industrial buildings, Reinforced concretes, Foundations, Construction materials, Economic analysis.

41-3809

Influence of temperature regime on the determination of dates of removing formwork from concrete lining of tunnels. [Vliianie temperaturnogo rezhima na opredelenie srokov raspalublivaniia betonnykh obdelok tunnelei].

Belkin, M.N., et al, *Energeticheskoe stroitel'stvo*, Apr. 1987, No.4, p.63-67, In Russian. 2 refs.

Zaltsev, M.V.

Frozen rock temperature, Permafrost, Tunnels, Linings, Concrete placing, Formwork (construction), Winter concreting.

41-3810

Method of laying pipelines at low temperatures. [Sposob prokladki truboprovoda pri nizkikh temperaturakh].

Karpov, S.V., *Ratsionalizatorskie predlozheniia i izobreteniia. Seriia: Transport i khranenie nefti i nefteproduktov*, 1985, No.10, p.12-13, SOVP 1145200, In Russian. Originally published in Biulleten' izobretenii, 1985, No.10.

Pipe laying, Thermal insulation, Soil freezing, Pipelines, Artificial thawing.

41-3811

Seismic bedrock depth measurements and the origin of George VI Sound, Antarctic Peninsula.

Maslanyj, M.P., *British Antarctic Survey. Bulletin*, May 1987, No.75, p.51-65, 26 refs.

Mapping, Ice shelves, Seismic refraction, Topographic surveys, Radio echo soundings, Antarctica—George VI Ice Shelf.

Seismic sounding has been used to determine bedrock depths beneath George VI Ice Shelf. A contour map and profiles illustrate the bedrock topography. The ice shelf is underlain by a deep steep-sided elongated trough trending N-S in the north and E-W in the south with bedrock depths exceeding 800 and 1000 m respectively. This supports the concept that George VI Sound is, in part, an extensional feature. Hydrographic soundings suggest that the rift-like feature extends north to at least lat 68 deg 30 S. The present setting of Alexander I is explained in terms of crustal extension producing northwesterly movement relative to the Antarctic Peninsula. In southern George VI Sound rifting developed sub-parallel to the continental margin whereas in the north it formed discordantly to the margin and possibly along an older tectonic boundary. (Auth. mod.)

41-3812

Ice thickness data, winter 1980-1981.

Canada. Atmospheric Environment Service. Ice Centre, Ottawa, Ontario, June 30, 1987, 50p., In English and French.

Ice cover thickness, River ice, Freezeup, Ice breakup, Ice formation, Ice deterioration.

41-3813

Improving low temperature startability of M113 vehicles: automatic engine cycling tests.

Shankhla, V.S., et al, *Defence Research Establishment Suffield, Ralston, Alberta. Suffield memorandum*, June 1987, No.1163, 23p. + appends., 7 refs.

Stupich, T.F., Förster, W.G.

Cold weather operation, Diesel engines, Vehicles, Low temperature tests, Maintenance, Statistical analysis.

41-3814

Revised guidelines for blasting floating ice.

Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1986, SR 86-10, 37p., ADA-168 760, 11 refs.

Ice blasting, Penetration tests, Floating ice, Explosion effects, Subglacial observations.

Empirical prediction curves for ice blasting are given, and their derivation and use is explained. Alternative forms of the curves, which relate more closely to conventional underwater explosion technology, are developed and examined. Results of experiments with gas blasting devices are summarized and discussed in relation to the cratering effects of conventional explosives. There is a brief discussion of the energetics of ice fragmentation, effects of surface charges are outlined, and penetration by shaped charges is described. Some test data that were not previously available are given in an appendix.

41-3815

Ice heat sinks. Part I: Vertical systems.

Lunardini, V.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1986, SR 86-14, 107p., ADB-105 859, Refs. p.40-42.

Military operation, Ice heat flux, Heat sinks, Heat transfer, Thermal properties, Mathematical models, Design, Computer applications, Ice melting, Water temperature.

A review is presented of the general characteristics of ice heat sinks, including thermal, mechanical and operational aspects. The thermal design of a vertical ice heat sink with annular flow is outlined using a computer model to give quantitative results. The mathematical model allows interaction between the ice sink and the surrounding rock material. Design curves are presented to estimate the outlet water temperature as a function of time and the rate of ice melt.

41-3816

After-action report—Reforger '85.

Liston, R.A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1986, SR 86-22, 20p. ADB-107 244.

Military operation, Tanks (combat vehicles), Tires, Snow cover effect, Soil water, Trafficability, Snowfall.

Four demonstrations associated with the 1985 REFORGER are described: a demonstration of the performance characteristics of commercially available radial tires, a demonstration of the use of a soil moisture sensor to predict the trafficability of soils in a maneuver area, a demonstration of the need to account for the effects of a snow cover when planning anti-tank and anti-personnel mine fields, and a determination of the effects of the winter environment on tank electro/optical systems performance.

41-3817

Winter field fortifications.

Farrell, D., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1986, SR 86-25, 50p., ADB-106 228, 23 refs.

Fortifications, Military operation, Snow (construction material), Wooden structures, Embankments, Winter, Tests.

Preparation of winter field fortifications poses problems that are not encountered in any other environment. The primary construction materials available for aboveground construction are snow and wood. This report describes what snow is, and how and when to use it to the best advantage; and it presents the results of tests of the capacity of snow embankments to stop projectiles. The information presented is based on both laboratory and field test results. Both approaches were required to understand why a bullet stops quickly in snow and how durable a snow fortification can be. Field tests showed that a non-fuzed round as large as that from the Soviet 14.5 mm KPV can be stopped by 2 m (6.6 ft) of packed snow. Laboratory studies revealed the mechanics of bullet interaction with snow. For the larger, fragmentation munitions field tests were cumbersome and unproductive. But a laboratory simulation of fragment penetration into snow showed that only 0.6 m (2 ft) of packed snow stops the smaller, high-velocity fragments while 1.5 m (5 ft) of snow is required to stop the larger, slower fragments. To represent the larger, anti-armor, direct-fire weapons containing shaped-charge warheads, the 90-mm M67 and the 70-mm Soviet RPG-7 were used in field tests. The results showed that 3 m (10 ft) of snow absorbed all effects, even after multiple impacts.

41-3818
Ice heat sinks. Part 2: Horizontal systems.
Lunardini, V.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1986, SR 86-26, 104p., ADB-111 755, Refs. p.23-25.
Military operation, Heat sinks, Ice heat flux, Heat transfer, Computer applications, Mathematical models, Thermal properties, Ice melting, Water temperature.
The thermal design of a horizontal ice heat sink with horizontal water flow is outlined using a computer model to give quantitative results. The mathematical model allows interaction between the ice sink and the surrounding rock material. Data taken from an experiment, undertaken as part of this study, on melting, horizontal ice sheets were used in the mathematical model. Design curves are presented to estimate the outlet water temperature as a function of time and the rate of ice melt. The horizontal ice heat sinks can deliver outlet water at temperatures between 45 and 55 F for a considerable period of time (hundreds of hours) if the heat dissipation rate of the sink is less than 0.8 kW/ft. For this range of heat dissipation rates, the horizontal sink is comparable in performance to the vertical ice heat sink. The mathematical model emphasizes the thermal aspects of the heat sink with no consideration given to mechanical and plumbing problems, construction techniques, or maintenance of the sink.

41-3819
Equipment for making access holes through arctic sea ice.
Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1986, SR 86-32, 34p., ADA-180 901, 34 refs.
Ice openings, Ice drills, Projectile penetration, Sea ice, Hydraulic jets, Ice blasting, Equipment, Rotary drilling, Percussion drilling, Ice cutting.
Navy underwater construction teams require a capability for making access holes through arctic sea ice. Required hole diameters range from less than 4 in. (100 mm) to more than 10 ft (3 m) in ice up to 15 ft (4.6 m) thick. Small diameter holes are to be completed in less than 4 hr and large diameter holes in less than 8 hr. The report first gives brief descriptions of the working environment, site access considerations, and probable operational procedure. Principles and techniques for penetrating sea ice are summarized, with an initial list of 14 topics. Twelve of these items are identified as potentially relevant, and are discussed more fully. They include: 1) projectile penetration, 2) shaped charge penetration, 3) high pressure water jets, 4) blasting, 5) flame jets, 6) electrothermal devices, 7) hydrothermal devices, 8) rotary drilling, 9) percussive and vibratory penetration, 10) mechanical cutting, 11) chemical penetration, 12) exotic concepts. The final selection, which takes into account practical concerns and field experience, recommends the following things as basic tools: a) small diameter auger drills (less than 4 in. diam), b) large diameter auger drills (approx. 9 in. diam), c) chain saws, d) a hot water system for drilling and cutting. The discussion of associated equipment covers electric generators, hoists and lifting tackle, hand tools, and blasting supplies. Consideration is also given to single-fuel operation, bulk melting, and possibilities for use of compressed air. Recommendations for development work by NCEL are given.

41-3820
Losses of explosives residues on disposable membrane filters.
Jenkins, T.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1987, SR 87-02, 25p., ADA-180 889, 10 refs.
Knapp, L.K., Walsh, M.E.
Explosives, Pollution, Filters, Laboratory techniques, Experimentation, Water pollution, Solutions.
A number of 0.45-micron disposable filters were tested for sorption of HMX, RDX, TNB, DNB, tetryl, TNT and 2,4-DNT. Both aqueous and mixed aqueous-organic solvent matrices were tested. For aqueous matrices, the Nalgene (green) cellulose acetate filter sorbed significant amounts of HMX, RDX, TNT and 2,4-DNT. The Gelman Acro LC25 filter, described as a naturally hydrophilic fluoropolymer, also sorbed significant levels of HMX, TNT and tetryl. Where sorption was found, losses were greatest for the first portion of filtrate passed through the filter and for filtration conducted slowly. Addition of 50% organic solvent prior to filtration eliminated sorption problems for all filters tested. When aqueous matrices are filtered, the recommended procedure is to discard the first 10-mL portion of filtrate and retain the second 10-mL portion for analysis.

41-3821
Outline of the Glaciological Research Project in Patagonia, 1985-1986.
Nakajima, C., *Bulletin of glacier research*, Mar. 1987, No.4, p.1-6, 1 ref., With Spanish summary.
Glaciology, Glacier surveys, Research projects, Mountain glaciers, Chile—Patagonia.

41-3822
Summer climate of the Northern Patagonia Icefield.
Inoue, J., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.7-14, 8 refs., With Spanish summary.
Glacier ablation, Climatic factors, Glacial meteorology, Wind direction, Air temperature, Humidity, Seasonal variations, Diurnal variations, Chile—Patagonia, Chile—San Rafael Glacier, Chile—Soler Glacier.

41-3823
Characteristics of precipitation and vertical structure of air temperature in the northern Patagonia.
Fujiyoshi, Y., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.15-23, 4 refs., With Spanish summary.
Kondo, H., Inoue, J., Yamada, T.
Precipitation (meteorology), Air temperature, Glacial meteorology, Seasonal variations, Atmospheric pressure, Chile—Patagonia.

41-3824
Wind regime of San Rafael Glacier, Patagonia.
Inoue, J., *Bulletin of glacier research*, Mar. 1987, No.4, p.25-30, 3 refs., With Spanish summary.
Glacial meteorology, Wind (meteorology), Glacier tongues, Altitude, Chile—Patagonia.

41-3825
Meteorological measurements at Soler Glacier, Patagonia, in 1985.
Fukami, H., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.31-36, 5 refs., With Spanish summary.
Glacial meteorology, Moraines, Glacier surfaces, Meteorological data, Glacier ablation, Air temperature, Atmospheric humidity, Wind factors, Chile—Patagonia, Chile—Soler Glacier.

41-3826
Ablation of ice and heat balance on Soler Glacier, Patagonia.
Fukami, H., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.37-42, 6 refs., With Spanish summary.
Naruse, R.
Glacier ablation, Glacier heat balance, Albedo, Glacier surfaces, Analysis (mathematics), Chile—Patagonia.

41-3827
Ice thickness deduced from gravity anomalies on Soler Glacier, Nef Glacier and the Northern Patagonia Icefield.
Casassa, G., *Bulletin of glacier research*, Mar. 1987, No.4, p.43-57, 25 refs., With Spanish summary.
Glacier thickness, Ice cover thickness, Glacier ablation, Gravity anomalies, Glacier beds, Outwash, Chile—Patagonia.

41-3828
Glaciological characteristics revealed by 37.6-m deep core drilled at the accumulation area of San Rafael Glacier, the Northern Patagonia Icefield.
Yamada, T., *Bulletin of glacier research*, Mar. 1987, No.4, p.59-67, 13 refs., With Spanish summary.
Glacier surfaces, Drill core analysis, Ice cores, Ice structure, Firn, Snow cover, Permeability, Ice physics, Chile—Patagonia, Chile—San Rafael Glacier.

41-3829
Structural and morphological characteristics of Soler Glacier, Patagonia.
Aniya, M., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.69-77, 10 refs., With Spanish summary.
Naruse, R.
Glacier ice, Ice structure, Glacier mass balance, Glacier surfaces, Photography, Moraines, Glacial deposits, Chile—Patagonia, Chile—Soler Glacier.

41-3830
Characteristics of ice flow of Soler Glacier, Patagonia.
Naruse, R., *Bulletin of glacier research*, Mar. 1987, No.4, p.79-85, 17 refs., With Spanish summary.
Glacier flow, Glacier mass balance, Basal sliding, Glacier melting, Glacier thickness, Ice mechanics, Glacier surveys, Glacier surfaces, Velocity, Chile—Patagonia, Chile—Soler Glacier.

41-3831
Ice avalanches on Soler Glacier, Patagonia.
Kobayashi, S., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.87-90, 4 refs., With Spanish summary.
Naruse, R.
Glacier ablation, Avalanches, Air temperature, Snowfall, Chile—Patagonia, Chile—Soler Glacier.

41-3832
Hydrological characteristics of Soler Glacier drainage, Patagonia.
Fukami, H., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.91-96, 6 refs., With Spanish summary.
Escobar, F.
Glacial hydrology, Glacier melting, Drainage, Ice ablation, Meltwater, Water temperature, Runoff, Glacial rivers, Water chemistry, Chile—Patagonia, Chile—Soler Glacier.

41-3833
Cooling of water and the overlying air by melting ice at Lagoon San Rafael in the northern Patagonia.
Fujiyoshi, Y., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.97-102, 2 refs., With Spanish summary.
Nakajima, C., Inoue, J., Nagao, I.
Glacial lakes, Meltwater, Water temperature, Air temperature, Lake water, Floating ice, Temperature gradients, Chile—Patagonia.

41-3834
Water depth of Lagoon San Rafael, Patagonia.
Nakajima, C., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.103-105, 3 refs., With Spanish summary.
Inoue, J., Fujiyoshi, Y., Nagao, I.
Glacial lakes, Lake water, Limnology, Glacier tongues, Meltwater, Chile—Patagonia, Chile—San Rafael Glacier.

41-3835
Moraine formation at Soler Glacier, Patagonia.
Aniya, M., *Bulletin of glacier research*, Mar. 1987, No.4, p.107-117, 17 refs., With Spanish summary.
Glacial deposits, Moraines, Landforms, Glacier tongues, Gravel, Rocks, Glacier surfaces, Chile—Patagonia, Chile—Soler Glacier.

41-3836
Recent retreat of Soler Glacier, Patagonia as seen from vegetation recovery.
Sweda, T., *Bulletin of glacier research*, Mar. 1987, No.4, p.119-124, 3 refs., With Spanish summary.
Glacier surges, Moraines, Glacial deposits, Revegetation, Glacier flow, Topographic maps, Age determination, Chile—Patagonia, Chile—Soler Glacier.

41-3837
Dendrochronologies of San Rafael and Soler areas, Patagonia.
Sweda, T., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.125-132, 6 refs., With Spanish summary.
Inoue, J.
Trees (plants), Age determination, Climatic changes, Glacier ice, Statistical analysis, Growth, Precipitation (meteorology), Chile—Patagonia.

41-3838
Flow and surface structure of Tyndall Glacier, the Southern Patagonia Icefield.
Naruse, R., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.133-140, 14 refs., With Spanish summary.
Peña, H., Aniya, M., Inoue, J.
Glacier flow, Glacier surfaces, Surface structure, Glacier oscillation, Glacier ablation, Moraines, Photography, Chile—Patagonia, Chile—Tyndall Glacier.

41-3839
Aspects of glacial hydrology in Patagonia.
Peña, H., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.141-150, 8 refs., With Spanish summary.
Escobar, F.
Glacial hydrology, Runoff, Meteorological factors, Air temperature, Precipitation (meteorology), Seasonal variations, Chile—Patagonia.

41-3840
Ice core drilling operations in the Northern Patagonia Icefield.
Yamada, T., et al, *Bulletin of glacier research*, Mar. 1987, No.4, p.151-155, 2 refs., With Spanish summary.
Kondo, H., Fukuzawa, T.
Ice coring drills, Logistics, Ice cores, Equipment, Glacier ice, Transportation, Chile—Patagonia, Chile—San Rafael Glacier.

41-3841
Aerial surveys over the Patagonia Icefields.
Aniya, M., *Bulletin of glacier research*, Mar. 1987, No.4, p.157-161, 3 refs., With Spanish summary.
Glaciology, Aerial surveys, Glacier tongues, Photography, Chile—Patagonia.

41-3842
Experimental and numerical modeling of heat and mass transport in soil subjected to artificial freezing.
Conoby, M.J., Hanover, NH, Dartmouth College, Thayer School of Engineering, May 1987, 209p., M.S. thesis. Refs. p.120-125.
Soil freezing, Waste treatment, Artificial freezing, Heat transfer, Mass transfer, Mathematical models, Environmental protection, Experimentation, Soil classification.

41-3843
Influence of moisture on heat transfer in structures. [Kosteuden vaikutus rakenteiden lämpövirtoihin],
Kohonen, R., *Finland. Technical Research Centre. Research reports*, 1987, No.471, 56p., In Finnish with English summary. 9 refs.
Thermal insulation, Thermal conductivity, Structures, Heat transfer, Moisture transfer, Walls, Construction materials.

41-3844
Facade elements clad with clinker finish. [Klinkkerilaatoitetut betonielementit],
Orantie, K., *Finland. Technical Research Centre. Research reports*, 1987, No.477, 36p. + append., In Finnish with English summary. 5 refs.
Cements, Frost action, Concrete structures, Panels, Temperature variations, Moisture.

41-3845
Studies of basin heat balance and snowmelt runoff models.
Motoyama, H., *Hokkaido University, Sapporo, Japan. Institute of Low Temperature Science. Contributions*, 1986, No.35, p.1-53, 38 refs.
Runoff, Snowmelt, Heat balance, Watersheds, Wind velocity, Air temperature, Solar radiation, Altitude, Meltwater, Analysis (mathematics).

41-3846
Determination of stresses in the snow cover on a mountain slope by snow pressure gauge.
Oh'izumi, M., *Hokkaido University, Sapporo, Japan. Institute of Low Temperature Science. Contributions*, 1986, No.35, p.54-97, 30 refs.
Snow strength, Stresses, Snow density, Slope orientation, Strains, Viscosity, Pressure, Measuring instruments, Mountains.

41-3847
Vegetation and terrain mapping in Alaska using Landsat MSS and digital terrain data.
Sharsby, M., et al, *Photogrammetric engineering and remote sensing*, June 1986, 52(6), p.779-786, 29 refs.
Carneggie, D.
Vegetation, Topographic features, Remote sensing, Mapping, Aerial surveys, LANDSAT, Photography, United States—Alaska.

41-3848
Comparison of leaf and canopy reflectance of subarctic forests.
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Wendler, G.
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41-3849
Extinction coefficient measurement in falling snow with a forward scatter meter.
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Light scattering, Snowfall, Infrared radiation, Light transmission, Fog, Military operation.
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Greenwald, T.J., Wang, J.
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Ice crystal growth, Cloud droplets, Snow pellets, Temperature effects, Experimentation.

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Kajikawa, M.
Snow pellets, Snow crystal growth, Ice crystal structure, Velocity, Models, Analysis (mathematics).

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Ouellet, M.
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41-3855
Moving loads on sea ice.
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Sea ice, Ice cracks, Motor vehicles, Ice deterioration, Ice runways, Ice physics, Ice loads, Ice surface, Strain measuring instruments, Strain tests, Antarctica—McMurdo Sound.
A load moving on sea ice, whether the weight of a vehicle or the pressure exerted by a low-flying aircraft, produces a deflection which can in extreme cases cause ice failure. The magnitude and shape of the deflection profile depends on the weight and speed of the vehicle, and also the ice thickness and properties, with flexural-gravity waves radiating from the source at speeds above a critical value. This wave pattern was studied in detail on flat, snow-free sea ice in McMurdo Sound. Surface strain was measured directly and microcracking activity monitored to correlate measured strain with possible generation of dangerous cracks. Speeds of up to 28 m/sec (60 mph) were achieved with a pickup truck, and up to 80 m/sec with a US Navy C131 aircraft. Initial comparison between theory and experimental results is very encouraging. (Auth.)

41-3856
Substantial changes in the coastline of Antarctica revealed by satellite imagery.
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Gould, W.G.
Glacier surveys, Ice shelves, Icebergs, Remote sensing, Calving, Antarctica—Filchner Ice Shelf, Antarctica—Larsen Ice Shelf, Antarctica—Thwaites Glacier.
NOAA AVHRR and Landsat MSS imagery acquired between Jan. and Nov. 1986 has shown substantial changes in the antarctic coastline near the Filchner Ice Shelf, Larsen Ice Shelf and Thwaites Glacier. In the Filchner Ice Shelf area some 11,500 sq km of ice calved from mid-Apr. onward. In the Larsen Ice Shelf area two large bergs calved between Feb. and Aug. The combined volume of ice from these two events equals approximately three years' normal calving from the entire antarctic coastline. In the Thwaites Glacier area several changes appear to have occurred at the base of Thwaites Iceberg Tongue and Thwaites Glacier Tongue. (Auth.)

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41-3858
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Sea water freezing, Mathematical models, Human factors engineering, Environmental protection, Ocean environments, Tundra, Taiga, Deserts, Soil erosion, Pollution, Polar regions, Ice formation, Petroleum products, Ice surface, Economic development, Albedo, Heat balance, Snow surface.

41-3861
Reserved zones of Franz Josef Land. [Zapovednye zony v raĭone Zemli Frantsa-Iosifa],
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Felgin, IU.M.
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41-3863
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41-3864
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41-3865
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Deserts, Soil profiles, Soil formation, Patterned ground, Organic soils, Polar regions, Classifications.

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41-3867
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41-3869
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41-3877
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Frost heave, Soil freezing, Soil water migration, Temperature gradients, Tests.

41-3884
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Frost heave, Frozen ground mechanics, Underground pipelines, Freeze thaw cycles, Steel structures, Frost resistance, Protective coatings, Adhesion.

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Comparison between Landsat cloud images and precipitation radar echoes.
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Radar echoes, Measuring instruments, Computer applications.

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Foundations, Grouting.

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41-3892
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41-3893
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Snow density, Snow water content, Radio waves, Snow electrical properties, Dielectric properties, Unfrozen water content.

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Snow hydrology, Remote sensing, Snowmelt, Runoff, Mapping, Hydrology, Rivers, Surface waters, Floods, Irrigation, Watersheds, Water pollution, India.

41-3904
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Runoff, Snowmelt, Remote sensing, River flow, Forecasting, Seasonal variations, Models, Himalaya Mountains.

41-3905
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Snow cover distribution, Stream flow, Remote sensing, Runoff, Hydrology, Snow depth, Forecasting, Models, Climatic factors, Computer applications, United States—Colorado.

41-3906
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41-3909
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Glacial hydrology, Runoff, Watersheds, Glacier melting, Ice melting, Snowmelt, Air temperature, Topographic features, Himalaya Mountains.

41-3910
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41-3912
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Runoff, Glacial hydrology, Water reserves, Meltwater, Rain, Himalaya Mountains.

41-3913
Meteorological features in Langtang Valley, Nepal Himalayas, 1985-1986.
Takahashi, S., et al, *Bulletin of glacier research*, Mar. 1987, No.5, p.35-40, 8 refs.
Glacial meteorology, Snow depth, Precipitation (meteorology), Rain, Seasonal variations, Climatic factors, Wind velocity, Himalaya Mountains.

41-3914
Seasonal variation of altitudinal dependence of precipitation in Langtang Valley, Nepal Himalayas.
Seko, K., *Bulletin of glacier research*, Mar. 1987, No.5, p.41-47, 11 refs.
Precipitation (meteorology), Glacial meteorology, Glacier alimentation, Seasonal variations, Himalaya Mountains.

41-3915
Seasonal variation of snowline in Langtang Valley, Nepal Himalayas, 1985-1986.
Morinaga, Y., et al, *Bulletin of glacier research*, Mar. 1987, No.5, p.49-63, 8 refs.
Seko, K., Takahashi, S.
Snow line, Climatology, Seasoanl variations, Altitude, Precipitation (meteorology), Air temperature, Himalaya Mountains.

41-3916
Characteristics of snowcover and formation process of dirt layer in the accumulation area of Yala Glacier, Langtang Himal, Nepal.
Iida, H., et al, *Bulletin of glacier research*, Mar. 1987, No.5, p.55-62, 8 refs.
Snow cover distribution, Glacier alimentation, Glacial deposits, Glacier mass balance, Snowfall, Snow water equivalent, Air temperature, Glacier surfaces, Himalaya Mountains.

41-3917
Formation of dirt layers and surface dust by microplant growth in Yala (Dakpatsen) Glacier, Nepal Himalayas.
Kohshima, S., *Bulletin of glacier research*, Mar. 1987, No.5, p.63-68, 6 refs.
Glacial deposits, Glacier surfaces, Glacier ablation, Dust, Algae, Bacteria, Albedo, Himalaya Mountains.

41-3918
First glaciological expedition to West Kunlun Mountains 1985.
Watanabe, O., et al, *Bulletin of glacier research*, Mar. 1987, No.5, p.77-84, 1 ref.
Zheng, B.
Mountain glaciers, Glaciology, Glacier ice, Snow accumulation, Precipitation (meteorology), Chemical analysis, Expeditions, Himalaya Mountains.

41-3919
Modern glaciers on the south slope of West Kunlun Mountains (in Aksayqin Lake and Guozha Co Lake drainage areas).
Zhang, Z., et al, *Bulletin of glacier research*, Mar. 1987, No.5, p.85-91, 7 refs.
Jiao, K.
Mountain glaciers, Snow line, Glacier mass balance, Glacier surges, Precipitation (meteorology), Air temperature, Slope orientation, Himalaya Mountains, China—Qingzang Plateau.

41-3920
Preliminary studies of Quaternary glaciation and palaeogeography on the south slope of West Kunlun.
Zheng, B., *Bulletin of glacier research*, Mar. 1987, No.5, p.93-102, 15 refs.
Glaciation, Paleoclimatology, Glacier surges, Geomorphology, Pleistocene, Moraines, Himalaya Mountains, China—Qinghai-Xizang Plateau.

41-3921
Permafrost and periglacial phenomena in West Kunlun Mountains of China.
Li, S., *Bulletin of glacier research*, Mar. 1987, No.5, p.103-109.
Permafrost distribution, Periglacial processes, Snow line, Climatology, Active layer, Ground ice, Thermokarst lakes, Frost weathering, Himalaya Mountains, China—West Kunlun Mountains.

41-3922
Characteristics of discharge from a glacier, observed in West Kunlun Mountains, China.
Nakawo, M., et al, *Bulletin of glacier research*, Mar 1987, No.5, p.111-114, 5 refs.
Watanabe, O
Glacial hydrology, Runoff, Subglacial drainage, Slope orientation, Diurnal variations, Streams, Temperature distribution, Himalaya Mountains, China—West Kunlun Mountains.

41-3923
Hydrological data of Langtang Valley, Nepal Himalayas.
Fukushima, Y., et al, *Bulletin of glacier research*, Mar. 1987, No.5, p.115-120, 1 ref.
Glacial hydrology, Runoff, Watersheds, Topographic features, Statistical analysis, Himalaya Mountains.

41-3924
Summary of meteorological data at Kyangchen in Langtang Valley, Nepal Himalayas, 1985-1986.
Takahashi, S., et al, *Bulletin of glacier research*, Mar. 1987, No.5, p.121-128.
Meteorological data, Snow depth, Precipitation (meteorology), Temperature distribution, Humidity, Wind velocity, Weather observations, Mountains, Himalaya Mountains.

41-3925
General information on ice thickness, Queen Elizabeth Islands, N.W.T. Arctic islands: 1978-1979-1980 data.
Wetzel, V.F., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, Jan. 1981, APOA No.174-1V1, 35p.
Ice cover thickness, Seismic surveys, Statistical analysis, Distribution, Computer applications, Canada—Northwest Territories—Queen Elizabeth Islands.

41-3926
Through the ice mining study—final report.
Crawford, M.W., et al, *U.S. Naval Surface Weapons Center.* [*Report*], June 1983, No.487-1, 5 sections + append., ADA-174 310, 26 refs.
Detwiler, R.L.
Military operation, Ice cover thickness, Penetration tests, Mines (ordnance), Design.

41-3927
Use of acoustics in localizing under-ice oil spills.
Francois, R.E., et al, *U.S. Coast Guard.* [*Report*], Aug. 1983, CG-D-26-83, 17p., ADA-133 709, 12 refs.
Wen, T.
Oil spills, Subglacial observations, Acoustic measurement, Detection, Underwater acoustics, Backscattering, Sea ice.

41-3928
Concentration and flux of wind-blown snow.
Mellor, M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1986, SR 86-11, 16p., ADA-170 504, 7 refs.
Fellers, G.
Snowdrifts, Snow removal, Wind tunnels, Visibility, Wind velocity, Mass transfer, Statistical analysis.
Representative graphical relations are developed for the flux and concentration of wind-blown snow as functions of wind speed and height above surface. Previously published field data are tabulated to provide 1201 data sets for flux and the same number for mass concentration. Using appropriately transformed variables, multiple regression analysis yields empirical relations for horizontal mass flux as a function of wind speed and height, and for mass concentration as a function of wind speed and height.

41-3929
Natural electrical potentials that arise when soils freeze.
Yarkin, I.G., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1986, SR 86-12, 24p., ADA-170 583, 16 refs.
Soil freezing, Electrical properties, Frost heave, Soil structure, Experimentation, Polarization (charge separation).
Samples of sand, kaolin, bentonite, and loam were frozen from the top downward in cylinders 10 to 12 cm high and 7 cm in diameter. During the freezing process electrical potentials of up to 300 mV were measured between platinum electrodes placed near the ends of the samples. The mechanism that gives rise to these potentials and the effect of soil type and fineness, moisture content, and moisture migration are discussed.

41-3930
MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 8. A science plan for a winter marginal ice zone experiment in the Fram Strait/Greenland Sea: 1987/89.
Davidson, K., ed, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1986, SR 86-09, 53p., ADA-169 070, Refs. p.46-47.
Ice physics, Remote sensing, Ice edge, Acoustics, Meteorology, Oceanography, Ice water interface, Measuring instruments, Fram Strait, Greenland Sea.

41-3931
Winter training of soldiers for driving commander's vehicle. [Spetsialisty KShM uchatsia zimoĭ],
Gnidyĭ, A., *Voennyĭ vestnik*, Jan. 1986, No.1, p.76-78, In Russian.
Trafficability, Military transportation, Military equipment, Telecommunication, Motor vehicles, Radio communication, Antennas, Education, Snow depth.

41-3932
March under arctic conditions. [Marsh v usloviiakh Zapoliar'ia],
Makarov, V., *Voennyĭ vestnik*, May 1986, No.5, p.74-76, In Russian.
River crossings, Military operation, Military equipment, Motor vehicles, Military engineering, Vehicle wheels, Pontoon bridges, Tracked vehicles, Snowstorms, Polar regions, Snowdrifts, Trafficability.

41-3933
Operation of technical equipment in freezing weather. [Osobennosti ekspluatatsii tekhniki zimoĭ],
Volloshnikov, D., et al, *Voennyĭ vestnik*, Jan. 1987, No.1, p.78-80, In Russian.
Belozerov, V.
Road icing, Icebound rivers, Military equipment, Snow cover structure, Snow depth, Ice cover thickness, Military transportation, Tracked vehicles, Motor vehicles, Vehicle wheels, Trafficability, Winter maintenance.

41-3934
Water supply in populated points of northern regions. [Vodosnabzhenie naselennykh punktov severnykh raĭonov],
Pavlov, G.D., et al, *Vodosnabzhenie i sanitarnaia tekhnika*, 1987, No.3, p.6-8, In Russian. 3 refs.
Alekseev, L.S., Tugusheva, V.I.
Water intakes, Permafrost hydrology, Water supply, Water treatment, Filters, Chemical composition, Suprapermafrost ground water.

41-3935
Water supply and sewage disposal in the Yamal Peninsula. [Vodosnabzhenie i kanalizatsiia poseleniĭ na poluostrove IAmal],
Kataev, V.V., et al, *Vodosnabzhenie i sanitarnaia tekhnika*, 1987, No.3, p.8-9, In Russian.
Rodin, V.N., Dobromyslov, A.IA.
Taliks, Water supply, Water intakes, Sewage disposal, Permafrost hydrology, Polar regions, Water pollution, Continuous permafrost, Petroleum products.

41-3936
Methods of dealing with icing problems on water intakes. [Metody bor'by s ledovymi zatrudneniiami na vodozaborakh],
Donov, A.A., *Vodosnabzhenie i sanitarnaia tekhnika*, 1987, No.3, p.12-14, In Russian. 4 refs.
Water intakes, Ice jams, Water pipelines, Countermeasures.

41-3937
Polar ice cores.
Palais, J.M., *Oceanus*, Winter 1986, 29(4), p.55-60, 3 refs.
Ice cores, Carbon dioxide, Ice composition, Paleoclimatology, Isotopes.
The 3 distinct chemical forms in which information on atmospheric composition and climate is preserved in ice cores are discussed. They are the stable isotope composition of the ice itself, the soluble and insoluble impurities and heavy metals, and the bubbles in the ice. The value of the ice core record, with regard to the depth-age relationship, temperature and precipitation, atmospheric gases, aerosols, and dynamics of the ice sheet is considered in detail.

41-3938
Model for simulating the variation in the oxygen isotope ratio in the meltwater discharge from the marginal zone of the ice cap at Pâkitsup akuliarusersua, Jakobshavn. [Model for simulering af ilt-isotop variationen i smeltevands afströmningen fra Indlandsisens rand ved Pâkitsup akuliarusersua, Jakobshavn],
Reeh, N., et al, *Denmark. Grönlands geologiske undersögelse. Gletscher-hydrologiske meddelelser*, Aug. 1986, No.86/1, 34p., In Danish with English summary. 17 refs.
Thomsen, H.H.
Ice edge, Meltwater, Isotope analysis, Ice sheets, Subglacial drainage, Oxygen isotopes, Models.

41-3939
Effect of Al and B contents on toughness of large heat input welds of steel plates, for arctic offshore structures (Investigation on large heat input weldability of steel plates with 50 kgf/mm(2) grade for arctic offshore structure—2).
Watanabe, S., et al, *Iron and Steel Institute of Japan. Transactions*, 1986, 26(8), p.B-284, 1 ref. Presented at the 111th ISIJ meeting, Apr. 1986, Lecture No.S616.
Steels, Plates, Offshore structures, Welding, Cold weather tests, Tensile properties, Heating.

41-3940
Development of heavy thick HT80 steel plates for racks of jack-up rigs.
Okano, S., et al, *Iron and Steel Institute of Japan. Transactions*, 1987, 27(1), p.B-14, Presented at the 112th ISIJ meeting, Oct. 1986, Lecture No.S1154.
Yano, K., Kaji, H., Takisawa, K.
Steels, Cold weather tests, Offshore structures, Cold tolerance, Plates.

41-3941
Development of tensile strength 50 kgf/mm(2) grade steel plates for arctic offshore structures with high toughness in large heat input welds (Investigation on large heat input weldability of steel plates with 50 kgf/mm(2) grade for arctic offshore structures—3).
Furusawa, J., et al, *Iron and Steel Institute of Japan. Transactions*, 1987, 27(1), p.B-15, 1 ref. Presented at the 112th ISIJ meeting, Oct. 1986, Lecture No.S1155.
Steels, Offshore structures, Welding, Tensile properties, Strength, Experimentation, Plates.

41-3942
Effect of microstructure on HAZ toughness of steel for offshore structures.
Endo, S., et al, *Iron and Steel Institute of Japan. Transactions*, 1987, 27(1), p.B-16, Presented at the 112th ISIJ meeting, Oct. 1986, Lecture No.S1157.
Steels, Offshore structures, Cold weather tests, Microstructure, Thermal effects, Welding.

41-3943
Analytical study of the effect of convection heat transfer on the sublimation of a frozen semi-infinite porous medium.
Fey, Y.C., et al, *International journal of heat and mass transfer*, Apr. 1987, 30(4), p.771-779, With French, German and Russian summaries. 15 refs.
Boles, M.A.
Heat transfer, Porous materials, Freeze drying, Convection, Sublimation, Moisture transfer, Analysis (mathematics), Pressure, Sands.

41-3944
All-Union Conference on nuclear-physical methods of environmental management, 3rd, Tomsk, May 21-23, 1985. Proceedings. [Trudy],
Vsesoiuznoe soveshchanie po iaderno-fizicheskim metodam analiza v kontrole okruzhaiushchei sredy, 3rd, Tomsk, May 21-23, 1985, Leningrad, Gidrometeoizdat, 1987, 172p., In Russian. For selected papers see 41-3945 through 41-3947.
Air pollution, Water pollution, Snow composition, Sampling, Snow samplers, Wastes, Aerosols, Atmospheric composition, Vegetation.

41-3945
Estimation of industrial emission into the atmosphere. [Otsenka atmosfernogo antropogennogo vybrosa promyshlennogo tsentra],
Boiarkina, A.P., et al, Vsesoiuznoe soveshchanie po iaderno-fizicheskim metodam analiza v kontrole okruzhaiushchei sredy, 3rd, Tomsk, May 21-23, 1985. Trudy (All-Union Conference on nuclear-physical methods of environmental management, 3rd, Tomsk, May 21-23, 1985. Proceedings) edited by IU.A. Izrael', Leningrad, Gidrometeoizdat, 1987, p.14-23, In Russian. 17 refs.
Human factors, Air pollution, Dust, Wastes, Aerosols, Snow cover distribution, Pollution, Metals, Snow samplers.

41-3946
Content of mercury in the snow cover of Pribaykal'e.
[Soderzhanie rtuti v snezhnom pokrove Pribaikal'ia].
Poslovin, A.L., et al, Vsesoiuznoe soveshchanie po iaderno-fizicheskim metodam analiza v kontrole okruzhaiushchei sredy, 3rd, Tomsk, May 21-23, 1985. Trudy (All-Union Conference on nuclear-physical methods of environmental management, 3rd, Tomsk, May 21-23, 1985. Proceedings) edited by IU.A. Izrael', Leningrad, Gidrometeoizdat, 1987, p.56-60, In Russian. 5 refs.
Grosheva, E.I.
Snow cover distribution, Sampling, Snow composition, Pollution, Metals, Laboratory techniques, USSR—Baykal Lake.

41-3947
Neutron-activation analysis of lichens and coniferous needles of cedar and fir for air pollution control of southern Pribaykal'e. [Neitronno-aktivatsionnyi analiz lishainikov, khvoi kedra i pikhty dlia kontrolia zagriazneniia atmosfernogo vozdukha v iuzhnom Pribaikal'e].
Kazachevskii, I.V., et al, Vsesoiuznoe soveshchanie po iaderno-fizicheskim metodam analiza v kontrole okruzhaiushchei sredy, 3rd, Tomsk, May 21-23, 1985. Trudy (All-Union Conference on nuclear-physical methods of environmental management, 3rd, Tomsk, May 21-23, 1985. Proceedings) edited by IU.A. Izrael', Leningrad, Gidrometeoizdat, 1987, p.91-102, In Russian. 11 refs.
Vetrov, V.A., Trass, Kh.Kh.
Lichens, Air pollution, Atmospheric composition, Precipitation (meteorology), Snow composition, Trees (plants), Vegetation.

41-3948
Climate of Antarctica. Papers presented at the All-Union Symposium on the Study of the Climate of Antarctica.
Dolgin, I.M., ed, New Delhi, Oxonian Press, 1986, 213p., For Russian original see 35-2178 or 12I-24432. Refs. passim. For individual papers see 41-3949 through 41-3954 or F-35828, I-35815 through I-35827, and I-35829 through I-35845.
Meetings, Meteorology, Weather, Climatology, Sea ice distribution.
The papers in this collection were presented at a conference on antarctic climatology. Analysis of data collected during long-term studies made possible the refinement of current ideas of meteorological regime, circulation and atmospheric structure in southern polar regions. Much attention is devoted to new aspects of climatology: questions of heat and moisture balance, circulation mechanisms, and upper atmosphere research using rockets. Radiation, albedo, ice sheet mass balance, ice distribution, and ozone, CO, and methane concentration in the atmosphere are also investigated.

41-3949
Short-wave radiation conditions in Antarctica based on the results of 20 years of observations.
Marshunova, M.S., Climate of Antarctica. Papers presented at the All-Union Symposium on the Study of the Climate in Antarctica. Edited by I.M. Dolgin, New Delhi, Oxonian Press, 1986, p.8-16, For Russian original see 35-2179 or 12I-24434. 4 refs.
Solar radiation, Radiation absorption, Albedo.
Results of 20 years of data gathering on direct total absorbed radiation and albedo of the reflecting surface are analyzed. Patterns of temporal and spatial distributions are noted. These data will aid in determining variability in radiation fluxes under different cloud conditions and year-to-year variation in monthly radiation totals. (Auth. mod.)

41-3950
Long-term variability of temperature, pressure and ice conditions in the South Orkney Islands.
Petrov, L.S., et al, Climate of Antarctica. Papers presented at the All-Union Symposium on the Study of the Climate in Antarctica. Edited by I.M. Dolgin, New Delhi, Oxonian Press, 1986, p.59-65, For Russian original see 35-2180 or 12I-24442. 7 refs.
Liubarskii, A.N.
Sea ice distribution, Atmospheric pressure, Air temperature, Scotia Sea, South Orkney Islands.
Data gathered from 1904 to 1972 were analyzed to calculate long-term fluctuations in air temperature, pressure and number of days of ice cover at Orcadas Station. It is shown that climatic variations there have a cyclical nature and covary with arctic climate changes. A 100-yr climatic cycle was noted. There is a connection between South Orkney Is. climatic cycles and cosmic factors. (Auth. mod.)

41-3951
Winter climatic conditions in Somov Sea based on the drift data of d/e the *Ob'* in 1973.
Petrov, L.S., et al, Climate of Antarctica. Papers presented at the All-Union Symposium on the Study of the Climate in Antarctica. Edited by I.M. Dolgin, New Delhi, Oxonian Press, 1986, p.72-79, For Russian original see 35-2181 or 12I-24444. 8 refs.
Maksimov, G.A.
Weather, Sea ice distribution, Antarctica—Oates coast, Antarctica—Ross Sea.
Results of meteorological observations taken as the *Ob'* drifted in ice from Mar. to June 1973 are analyzed. (Auth. mod.)

41-3952
Problems in glacier-climatic studies in Antarctica.
Aver'ianov, V.G., Climate of Antarctica. Papers presented at the All-Union Symposium on the Study of the Climate in Antarctica. Edited by I.M. Dolgin, New Delhi, Oxonian Press, 1986, p.86-91, For Russian original see 35-2182 or 12F-24446. 11 refs.
Ice sheets, Research projects, Glacier mass balance.
The state of the art of glaciochimatology with regard to antarctic ice cover is reviewed and the most pressing questions for further research are outlined.

41-3953
Humidity of air in Antarctica.
Zav'ialova, I.N., Climate of Antarctica. Papers presented at the All-Union Symposium on the Study of the Climate in Antarctica. Edited by I.M. Dolgin, New Delhi, Oxonian Press, 1986, p.92-101, For Russian original see 12I-24447. 8 refs.
Sea ice distribution, Humidity.
Spatial and temporal distribution of relative humidity is discussed. The different methods for determining atmospheric supersaturation over high-altitude areas of Antarctica are compared. Mean monthly charts of relative humidity from Jan. to June and charts relating relative humidity to ice in mid-winter months for both the Antarctic and the Arctic are given. (Auth. mod.)

41-3954
Method of preparing monthly charts of atmospheric precipitation in Antarctica.
Briazgin, N.N., Climate of Antarctica. Papers presented at the All-Union Symposium on the Study of the Climate in Antarctica. Edited by I.M. Dolgin, New Delhi, Oxonian Press, 1986, p.109-116, For Russian original see 35-2183 or 12I-24449. 5 refs.
Snow accumulation, Precipitation (meteorology), Analysis (mathematics).
Error in measuring precipitation in Antarctica and ways to reduce it are discussed. Graphs of the annual precipitation pattern based on corrected mean totals from key stations are given. Monthly precipitation charts are constructed by using these graphs and snow-accumulation results. Variability of annual total precipitation is considered. (Auth. mod.)

41-3955
Polar research.
Splettstoesser, J., *Geotimes*, Feb. 1986, 31(2), p.47-49.
Research projects, Polar regions.

41-3956
Polar research.
Splettstoesser, J., *Geotimes*, Feb. 1987, 32(2), p.49-50.
Research projects, Polar regions.
Significant discoveries and collections made by international groups of scientists in various parts of antarctica, activities in the U.S. related to antarctic programs, recent publications on polar earth sciences, and studies in polar regions supported by the National Science Foundation, are reviewed.

41-3957
Annealing recrystallization in laboratory and naturally deformed ice.
Gow, A.J., et al, *Journal de physique*, Mar. 1987, 48(3) Supplement, MP 2230, p.(C1)271-(C1)276, With French summary. 9 refs.
Sheehy, W.
Recrystallization, Ice crystal structure, Ice deformation, Ice strength, Ice crystal nuclei, Ice melting, Pressure.
Results are presented of annealing recrystallization in both naturally and laboratory deformed ice. Thin section techniques were used to follow the progress of recrystallization which, in the case of highly compressed ice pellets annealed at -3 C, showed that as soon as any new crystal was nucleated in the deformed ice matrix it retained its lattice orientation over the duration of the recrystallization. Laboratory annealing at ambient pressures of highly deformed, strongly oriented crystal ice from cores deep in the Antarctic Ice Sheet resulted in growth of very large crystals exhibiting c-axis orientations very much degraded with respect to the original ice. Textures and fabrics of the same ice annealed at 200 bars confining pressure closely resembled those observed in ice undergoing dynamic (annealing) recrystallization at 190-200 bars overburden pressure near the base of the ice sheet, which at this location in Antarctica was at pressure melting. (Auth.)

41-3958
Restraints on thin section analysis of grain growth in unstrained polycrystalline ice.
Gow, A.J., *Journal de physique*, Mar. 1987, 48(3) Supplement, MP 2231, p.(C1)277-(C1)281, With French summary. 8 refs.
Ice crystal growth, Ice crystal structure, Grain size, Air entrainment, Bubbles, Tests.
Tests were performed at -1 C to evaluate the effects of a free surface and the thickness dimensions of thin sections on the growth of grains in fine-grained, pore-rich, strain-free polycrystalline ice. Results show that negligible growth of grains occurs when the mean size of grains is more than 1.5 to 2 times the section thickness. Grain growth in thicker sections was significant for the fact that grain boundary migration, leading to 3-4 fold increases in average grain size, was virtually unaffected by the presence of large numbers of bubbles in the ice. Nor was there any evidence to indicate any concentrating of bubbles along migrating boundaries. Grain boundary grooving was a characteristic feature of most sections undergoing grain growth. This implies actual migration of grooves during grain growth. The fact that the total length of grooves decreased with increasing grain size also implies some process of groove consumption during grain growth. Three-dimensional grain growth measurements in bulk samples compared favorably with those obtained from sections two to three times thicker than the mean grain diameter. (Auth.)

41-3959
Chemical properties of snow in the northeastern United States.
Kumai, M., *Journal de physique*, Mar. 1987, 48(3) Supplement, MP 2232, p.(C1)625-(C1)630, With French summary. 7 refs.
Snow composition, Chemical properties, Aerosols, Air pollution, Scanning electron microscopy, Snowfall, Wind direction, X ray analysis, Ions, United States—New Hampshire—Hanover.
Samples of fresh snow from Hanover, N.H., were found to be slightly acidic, with pH ranging from 3.56 to 5.63, and had electrolytic conductivities in the range 2.52 to 80.0 microS/cm. Snowfalls accompanied by southerly winds from densely populated areas averaged about 3 times higher in hydrogen ion concentration and electrolytic conductivity than snowfalls accompanied by northerly winds from less populated areas. Particles found in fresh snow examined with a scanning electron microscope and an energy dispersive X-ray analyzer were most frequently soil minerals, with some fly ash particles, and occasionally diatoms and pollen. Sulfur-rich black particles were presumed to be from local oil-fired heating and electric power plants, while silicon-rich ly ash particles were assumed to have originated at distant coal-fired electric power plants.

41-3960
Ice and hydropower. [Is og vandkraft].
Thomsen, H.H., *Denmark. Grönlands geologiske undersögelse. Gletscher-hydrologiske meddelelser*, Dec. 1986, No.86/2, 73p., In Danish with English summary. Refs. p.66-73.
Glacial hydrology, Glaciology, Electric power, Bibliographies, Glacier flow, Ice edge, Remote sensing, Photogrammetry, Runoff, Glacier mass balance, Greenland.

41-3961
Iceberg study, Saglek, Labrador, including cruise report C.S.S. "Dawson", August 7-August 26, 1972.
Allen, J.H., St. John's, Memorial University of Newfoundland, [1973], 92p.
cebergs, Aerial surveys, Radar echoes, Oceanography, Iceberg towing, Mapping, Underwater ice, Weather stations, Equipment, Meteorological data, Marine biology, Canada—Labrador.

41-3962
Summaries.
International Symposium on Remote Sensing of Environment, 18th, Paris, Oct. 1-5, 1984, Ann Arbor, Environmental Research Institute of Michigan, [1985], 251p., For the full proceedings see 39-3703.
Snow surveys, Ice surveys, Remote sensing, Radiometry, Microwaves, Albedo, Mapping, Meetings, Snow physics.

41-3963
Melting of horizontal ice layer from above by combined effect of temperature and concentration of aqua-solvent.
Sugawara, M., et al, *Wärme- und Stoffübertragung*, 1987, Vol.21, p.227-232, 4 refs. With German summary.
Inaba, H., Nishimura, H., Mizuno, M.
Ice melting, Temperature effects, Ice water interface, Solutions.

41-3964
Icy Galilean satellite reflectance spectra: less ice on Ganymede and Callisto?.
Spencer, J.R., *Icarus*, Apr. 1987, 70(1), p.99-110, 19 refs.
Extraterrestrial ice, Planetary environments.

41-3965
Behavior of hydrophobic, organic micropollutants in different karst water systems 1: transport of micropollutants and contaminant balances during the melting of snow.
Simmleit, N., et al, *Water, air, and soil pollution*, May 1987, 34(1), p.79-95, 59 refs.
Herrmann, R.
Water pollution, Ground water, Snowmelt, Karst, Seepage.

41-3966
Behavior of hydrophobic, organic micropollutants in different karst water systems 2: filtration capacity of karst systems and pollutant sinks.
Simmleit, N., et al, *Water, air, and soil pollution*, May 1987, 34(1), p.97-109, 40 refs.
Herrmann, R.
Water pollution, Ground water, Seepage, Karst.

41-3967
Modeling of BOD-DO dynamics in an ice-covered river in northern China.
Hou, R., et al, *Water research*, Mar. 1987, 21(3), p.247-251, 8 refs.
Li, H.
Water pollution, Ice cover effect, Water chemistry.

41-3968
Simulation for growth of snowflake.
Miyazima, S., et al, *Physical Society of Japan. Journal*, Feb. 1987, 56(2), p.411-443, 19 refs.
Tanaka, T.
Snowflakes, Snow crystal growth.

41-3969
History of high-magnitude snow avalanches, southern Glacier National Park, Montana, U.S.A.
Butler, D.R., et al, *Mountain research and development*, May 1985, 5(2), p.175-182, 30 refs. With French and German summaries.
Malanson, G.P.
Avalanches, History, United States—Montana—Glacier National Park.

41-3970
Remote sensing techniques used in solving geobotanical problems. [Metody distantsionnykh issledovaniĭ dlia resheniia prirodovedcheskikh zadach],
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Taiga, Forest fires, Spaceborne photography, Mapping, Photointerpretation, Remote sensing.

41-3971
Remote sensing methods of evaluating the state of taiga and its reforestation after forest fires. [Distantsionnye metody otsenki sostoianiia i formirovaniia taezhnykh lesov posle pozharov],
Furiaev, V.V., Metody distantsionnykh issledovaniĭ dlia resheniia prirodovedcheskikh zadach (Remote sensing techniques used in solving geobotanical problems) edited by V.N. Sharapov, Novosibirsk, Nauka, 1986, p.147-159, In Russian. 31 refs.
Taiga, Forestry, Forest fires, Spaceborne photography, Mapping, Photointerpretation, Remote sensing, Surveys.

41-3972
Remote sensing techniques in studying seasonal dynamics of landscapes. [Izuchenie sezonnoĭ dinamiki landshaftov distantsionnymi metodami],
Elagin, I.N., Metody distantsionnykh issledovaniĭ dlia resheniia prirodovedcheskikh zadach (Remote sensing techniques used in solving geobotanical problems) edited by V.N. Sharapov, Novosibirsk, Nauka, 1986, p.159-169, In Russian. 18 refs.
Phenology, Remote sensing, Photogrammetric surveys, Landscape types, Geobotanical interpretation.

41-3973
Using spaceborne photography data in studying forests and swamps. [Primenenie aerokosmicheskikh materialov pri lesobolotovedcheskikh issledovaniiakh],
Gorozhankina, S.M., Metody distantsionnykh issledovaniĭ dlia resheniia prirodovedcheskikh zadach (Remote sensing techniques used in solving geobotanical problems) edited by V.N. Sharapov, Novosibirsk, Nauka, 1986, p.169-189, In Russian. Refs. p.187-189.
Spaceborne photography, Taiga, Swamps, Geobotanical interpretation, Mapping, Charts, Cryogenic soils, Sands, Clay soils.

41-3974
All-Union conference on geographic problems in regions of new economic development. Summaries of reports. [Tezisy dokladov],
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Chistobaev, A.I., ed.
Ice structure, Permafrost distribution, Permafrost structure, Economic development, Environmental impact, Cryogenic soils, Human factors, Gas pipelines, Permafrost beneath structures, Permafrost beneath lakes, Ground ice.

41-3975
Regionalization of permafrost zone in the USSR for environmental protection purposes. [Opyt ratonirovaniia kriolitozony SSSR v prirodookhrannykh tseliakh],
Chizhov, A.V., et al, Vsesoiuznaia konferentsiia po geograficheskim problemam ratonov novogo osvoeniia, Tyumen', Oct. 1986 (All-Union conference on geographic problems in regions of new economic development. Summaries of reports) edited by A.I. Chistobaev, Leningrad, 1986, p.39, In Russian.
Van'ko, IU.V., Gavrilov, A.V.
Ice structure, Permafrost distribution, Permafrost structure, Economic development, Environmental impact, Cryogenic soils, Human factors engineering, Ground ice.

41-3976
Interactions between "cold" gas pipelines and freezing ground in the Far North. [Osobennosti vzaimodeĭstviia "kholodnykh" gazoprovodov s promerzaiushchimi gruntami v ratonakh Kraĭnego Severa],
Mironov, N.G., et al, Vsesoiuznaia konferentsiia po geograficheskim problemam ratonov novogo osvoeniia, Tyumen', Oct. 1986 (All-Union conference on geographic problems in regions of new economic development. Summaries of reports) edited by A.I. Chistobaev, Leningrad, 1986, p.42-43, In Russian.
Gas pipelines, Permafrost beneath structures, Seasonal freeze thaw, Active layer, Stresses, Strains.

41-3977
Influence of landscape conditions on hydrological and hydrochemical characteristics of lakes in Central Prio'e. [Vliianie landshaftnykh usloviĭ na gidrologicheskie i gidrokhimicheskie osobennosti ozer Srednego Prioʹia],
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Permafrost beneath lakes, Landscape types, Paludification, Limnology, Water chemistry, Taiga, USSR—Ob' River.

41-3978
Evaluation of the influence of natural conditions on performance of motor vehicle transport in the northeastern USSR. [Otsenka vliianiia prirodnykh usloviĭ na rabotu avtomobilʹnogo transporta Severo-Vostoka],
Belinskiĭ, B.V., Vsesoiuznaia konferentsiia po geograficheskim problemam ratonov novogo osvoeniia, Tyumen', Oct. 1986 (All-Union conference on geographic problems in regions of new economic development. Summaries of reports) edited by A.I. Chistobaev, Leningrad, 1986, p.168-169, In Russian.
Permafrost distribution, Transportation, Motor vehicles, Permafrost beneath structures, Roads, Railroads, USSR—Magadan, USSR—Yakutia.

41-3979
Revegetation of West Siberian forests. [Vosstanovlenie lesov Zapadnoĭ Sibiri],
Vorob'ev, V.N., ed, Krasnoyarsk, 1985, 103p., In Russian. For selected papers see 41-3980 and 41-3981. Refs. passim.
Forest soils, Revegetation, Cryogenic soils, Protective vegetation, Human factors, Forest strips, Grazing, Soil erosion, Permafrost depth.

41-3980
Revegetation of cleared areas in pine forests of southern Priob'e under conditions of increased human activities. [Vosstanovlenie sosnovykh vyrubok iuzhnogo Priobʹia v usloviiakh povyshennykh antropogennykh nagruzok],
Bekh, I.A., Vosstanovlenie lesov Zapadnoĭ Sibiri (Revegetation of West Siberian forests) edited by V.N. Vorob'ev, Krasnoyarsk, 1985, p.4-11, In Russian. 16 refs.
Forest soils, Cryogenic soils, Active layer, Forestry, Soil erosion, Revegetation.

41-3981
Stability of protective forest strips in northern Kulunda. [Ustoĭchivostʹ polezashchitnykh lesnykh polos v Severnoĭ Kulunde],
Lamin, L.A., Vosstanovlenie lesov Zapadnoĭ Sibiri (Revegetation of West Siberian forests) edited by V.M. Vorob'ev, Krasnoyarsk, 1985, p.79-87, In Russian. 9 refs.
Steppes, Frost penetration, Cryogenic soils, Soil water migration, Hygroscopic water, Protective vegetation, Forest strips, Snow retention, Deserts.

41-3982
Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987, summaries of reports, Vol.1. [Tezisy dokladov, Vyp.1],
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Vorob'ev, V.V., ed, Khudiakov, G.I., ed.
Meetings, Economic development, Environmental protection, Natural resources, Climatic factors, Research projects.

41-3983
Provision of hydrological information for rational use of natural resources to the Task Economic Complex of the BAM zone. [Zadachi gidrologicheskogo obespecheniia ratsionalʹnogo prirodopolʹzovaniia TPK zony BAM],
Evstigneev, V.M., et al, Soveshchanie geografov Sibiri i Dal'nego Vostoka o roli geografii v uskorenii nauchno-tekhnicheskogo progressa, 8th, Irkutsk, 1987, Vyp.1 (Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987, summaries of reports, Vol.1 edited by V.V. Vorob'ev, and G.I. Khudiakov, Irkutsk, 1986, p.156, In Russsian.
Tikhotskiĭ, K.G., Khristoforov, A.V.
Water supply, Rivers, Runoff, Water balance, Baykal Amur railroad.

41-3984
Tractive power of walking all-terrain vehicles designed for swamps. [Moshchnostʹ privoda bolotokhodnogo shagaiushchego dvizhiteliia],
Korovitsyn, L.F., et al, *Torfianaia promyshlennost'*, Feb. 1987, No.2, p.22-24, In Russian. 5 refs.
Petrov, A.A.
All terrain vehicles, Swamps, Design.

41-3985
Proceedings.
International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985, Ann Arbor, Environmental Research Institute of Michigan, [1986], 1101p. (2 vols.), Refs. passim. For selected papers see 41-3986 through 41-3995.
Ice surveys, Snow surveys, Remote sensing, Microwaves, Meetings, Oceanography, Sea ice, Topographic features, Mapping, Computer applications.

41-3986
Ice sheet topography and internal characteristics from microwave and radar measurements.
Hodge, S.M., International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.1, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.237-255, Refs. p.249-251.
Ice sheets, Remote sensing, Topographic features, Glacier mass balance, Glacier flow, Microwaves, Radar echoes, Height finding, Mapping.
Satellite radar altimetry and very-high-frequency (VHF) radar sounding are important remote sensing techniques for the study of the Antarctic and Greenland ice sheets. This paper describes the major scientific results which have been found by using them, as well as their scientific limitations and relevance to ice sheet dynamics. Radar sounding, in particular, is indispensible to polar glaciology, not only because it provides the most crucial data of all, the ice thickness, but also because it has yielded a wealth of unexpected information, such as flow tracers, presence or absence of liquid water at the bed, and evidence of past volcanism. (Auth.)

41-3987
Future satellite systems for oceanic and cryospheric observations.
Sherman, J.W., III, International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.1, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.257-267, 5 refs.
Remote sensing, Oceanography, Sea ice, Ice surveys, Winds (meteorology), Ocean waves, Ocean currents, Computer applications.

41-3988
Airborne observations of polarization and photometry of terrestrial surfaces.
Egan, W.G., International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.1, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.501-510, 11 refs.
Ice surveys, Snow cover distribution, Remote sensing, Airborne equipment, Topographic features, Photometry, Surface properties, Optical properties, Antarctica—McMurdo Station.
As a prelude to the possible operational use of polarization in passive satellite remote sensing of terrestrial surfaces, polarimetric and photometric observations were made from an airborne platform over various relatively uniform ice, ocean, snow and terrestrial surfaces on the margin of the Antarctic continent. Sensor wavelengths were 0.36, 0.400, 0.500 and 1.0 micron. Comparisons of the airborne (helicopter) observations with ground based observations revealed that a set of characteristic remotely sensed polarimetric and photometric signatures can be determined for each representative terrestrial surface, which can be affected by the scale of the viewing area, its surface structure, slope and the intervening atmosphere.

41-3989
Near real-time data system for satellite passive microwave ice maps.
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Sea ice distribution, Remote sensing, Microwaves, Radiometry, Mapping, Ice conditions, Computer applications.

41-3990
Computer-assisted techniques for geophysical analysis of SAR sea-ice imagery.
Burns, B.A., et al, International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.2, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.947-959, 3 refs.
Sea ice distribution, Remote sensing, Geophysical surveys, Aerial surveys, Ice conditions, Ice floes, Ice mechanics, Computer applications, Ice edge.

41-3991
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Rubinstein, I.G., et al, International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.2, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.961-970, 13 refs.
Bunn, F.E., Ramseier, R.O.
Sea ice distribution, Remote sensing, Geophysical surveys, Radiometry, Microwaves, Wind velocity, Ice edge, Models, Computer applications.

41-3992
Ground-based system for sensing radiometric properties of snow, ice, and water.
Steyn-Ross, D.A., et al, International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.2, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.971-980, 6 refs.
Moreau, T.A., Cameron, M.
Snow cover, Ice cover, Radiometry, Physical properties, Microwaves, Water, Equipment, Computer applications, Ice detection.

41-3993
Integration of SNOTEL data and remotely sensed snow covered area in water supply forecasting.
Shafer, B.A., International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.2, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.1045-1056, 15 refs.
Snow cover distribution, Remote sensing, Snow water equivalent, Runoff, Water supply, Forecasting, Snow melting, Models, Stream flow.

41-3994
Floodplain land cover mapping using thematic mapper data.
Kerber, A.G., et al, International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.2, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.1057-1064, 4 refs.
Flood control, Remote sensing, Mapping, Damage.

41-3995
Interactive snowcover mapping with geostationary satellite data over the western United States.
Allen, M.W., et al, International Symposium on Remote Sensing of Environment, 19th, Ann Arbor, MI, Oct. 21-25, 1985. Proceedings, Vol.2, Ann Arbor, Environmental Research Institute of Michigan, [1986], p.1065-1074, 2 refs.
Mosher, F.R.
Snow cover distribution, Remote sensing, Mapping, Weather forecasting.

41-3996
Generation of unstable modes of the iceward-attenuating swell by ice breeze.
Chu, P.C., *Journal of physical oceanography*, June 1987, 17(6), p.828-832, 8 refs.
Sea ice, Ice cover effect, Wind (meteorology), Wave propagation.

41-3997
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Wood, A.M., et al, *Journal of phycology*, Mar. 1987, 23(1), p.42-54, Refs. p.53-54.
Lande, R., Fryxell, G.A.
Ice edge, Algae, Antarctica—Weddell Sea.
Experiments with 10 clonal isolates of *Thalassiosira tumida*, made by single cell isolation from net hauls obtained at six stations in the marginal ice zone of the northeastern Antarctic during spring 1983, are described. This first quantitative genetic analysis of variation in diatom morphology supports the recognition of *T. tumida* in specific rank initially developed from morphological and biogeographical data. Most of the phenotypic variability in several taxonomically important characters was not genetic, and genotypes overlapped broadly in range of morphological variation.

41-3998
Intracellular photosynthate allocation and the control of Arctic marine ice algal production.
Smith, R.E.H., et al, *Journal of phycology*, Mar. 1987, 23(1), p.124-132, 39 refs.
Clement, P., Cota, G.F., Li, W.K.W.
Algae, Ice cover effect, Photosynthesis, Nutrient cycle, Light effects, Cryobiology.

41-3999
Polynucleate hydrocarbon concentrations from oil spilled in seawater. [Incidencia del aceite derramado sobre la concentración de hidrocarburos polinucleados en aguas de mar],
Ventajas, L., *Buenos Aires. Instituto Antártico Argentino. Contribución*, 1986, No.322, 15p., In Spanish with English, French and German summaries. 5 refs.
Hydrocarbons, Ice conditions, Ice cover effect, Oil spills, Sea ice distribution, Antarctica—Weddell Sea.
A study on the variation of the concentration of polynucleate hydrocarbons in the course of time, when a ship anchored in stations adjacent to the Weddell Sea spilled oil, showed the following: near Marambio Station, the concentration of polynucleates increased at the time the ship was surrounded by ice, and decreased when the ice disappeared. Near Belgrano II Station, the concentration of polynucleates increased in the course of time until it reached a constant. It is concluded that the ice acts as a barrier preventing the longitudinal and transversal diffusion of polynucleate hydrocarbons and allowing them to concentrate. (Auth. mod.)

41-4000
Hot sand for improved traction on icy roads: estimations of costs and benefits.
Reckard, M.K., *Alaska. Dept. of Transportation and Public Facilities. Report*, Mar. 1985, AK-RD-85-25, 7p., 4 refs.
Road icing, Cost analysis, Ice removal, Sanding, Traction, Friction, Ice control.

41-4001
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Connor, B., Fairbanks, Alaska, Department of Transportation and Public Facilities, Division of Planning, Jan. 1985, c12p., 3 refs.
Bitumens, Pavements, Cold weather construction, Surface properties, Tests, United States—Alaska.

41-4002
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Maki, M., et al, *Japan. National Research Center for Disaster Prevention. Report*, Mar. 1987, No.39, p.1-17, 12 refs., In Japanese with English summary.
Yagi, T.
Snowfall, Radar echoes, Snow cover distribution, Topographic effects, Mountains, Slope orientation, Wind factors, Japan—Shinjo.

41-4003
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Sugawara, M., et al, *Japan. National Research Center for Disaster Prevention. Report*, Mar. 1987, No.39, p.87-113, 4 refs., In Japanese with English summary.
Ozaki, E.
Snowfall, Precipitation (meteorology), River basins, Analysis (mathematics), Seasonal variations.

41-4004
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Yamada, Y., *Japan. National Research Center for Disaster Prevention. Report*, Mar. 1987, No.39, p.115-131, 22 refs., In Japanese with English summary.
Avalanche mechanics, Avalanche formation, Snow mechanics, Snow stratigraphy, Avalanche deposits, Damage, Avalanche tracks, Mass balance.

41-4005
Traveling path of snow avalanche on real configuration II.
Nohguchi, Y., *Japan. National Research Center for Disaster Prevention. Report*, Mar. 1987, No.39, p.133-152, 3 refs., In Japanese with English summary.
Avalanche tracks, Avalanche mechanics, Analysis (mathematics), Velocity, Time factor.

41-4006
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Nohguchi, Y., *Japan. National Research Center for Disaster Prevention. Report*, Mar. 1987, No.39, p.153-162, 1 ref., In Japanese with English summary.
Avalanche mechanics, Loads (forces), Analysis (mathematics).

41-4007
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Sato, A., *Japan. National Research Center for Disaster Prevention. Report*, Mar. 1987, No.39, p.183-196, 11 refs., With Japanese summary.
Snow density, Wave propagation, Elastic waves, Impact strength, Velocity, Plastic properties, Shock waves, Snow compression.

41-4008
Simple probe for the measurement of frost heave within frozen ground in a permafrost environment.
Mackay, J.R., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.37-41, 17 refs., With French summary.
Frost heave, Permafrost physics, Frozen ground mechanics, Freeze thaw cycles, Soil water migration, Temperature gradients, Active layer, Frozen ground settling, Experimentation.

41-4009
Ice flow history and glacial dispersal in the Labrador Trough.
Klassen, R.A., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.61-71, 16 refs., With French summary.
Thompson, F.J.
Glacier flow, Ice sheets, Ice mechanics, Paleoclimatology, Striations, Glaciology, Glacial deposits, Stratigraphy, Moraines, Canada—Labrador.

41-4010
Morphosedimentary zones in the Bluenose Lake region, District of Mackenzie.
St-Onge, D.A., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.89-100, With French summary.
McMartin, I.
Glacial geology, Sediments, Glacier flow, Moraines, Paleoclimatology, Geomorphology, Landforms, Canada—Northwest Territories—Mackenzie.

41-4011
Acoustic survey and glacial history of Adams Lake, outer Nachvak Fiord, northern Labrador.
Bell, T., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.101-110, 11 refs., With French summary.
Rogerson, R.J., Klassen, R.A., Dyer, A.
Glaciation, Moraines, Acoustic measurement, Lacustrine deposits, Glacial geology, Paleoclimatology, Sediments, Climatic changes, Canada—Labrador—Adams Lake.

41-4012
Ground probing radar in the investigation of the competency of frozen tailings pond dams.
LaFlèche, P.T., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.191-197, 1 ref., With French summary.
Judge, A.S., Pilon, J.A.
Frozen ground physics, Ponds, Tailings, Radar echoes, Permafrost distribution, Dams, Leakage, Water flow, Water pollution, Ground thawing, Canada—Northwest Territories—Lupin.

41-4013
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Lewis, C.F.M., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.825-833, 27 refs., With French summary.
Parrott, D.R.
Ice scoring, Icebergs, Bottom topography, Ocean bottom, Mapping, Ice conditions, Acoustic measuring instruments, Canada—Newfoundland.

41-4014
Study of iceberg scours across the continental shelf and slope off southeast Baffin Island using the Sea MARC I midrange sidescan sonar.
Praeg, D., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.847-857, 28 refs., With French summary.
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Ice scoring, Icebergs, Ocean bottom, Bottom topography, Acoustic measuring instruments, Paleoclimatology, Seismic reflection, Canada—Northwest Territories—Baffin Island.

41-4015
Small boat seismic reflection survey of the Lougheed Island Basin-Cameron Island Rise-Desbarats Strait region of the Arctic island channels using open water leads.
Sonnichsen, G.V., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.877-882, 7 refs., With French summary.
Vilks, G.
Seismic reflection, Polynyas, Ice conditions, Ocean bottom, Stratigraphy, Bottom sediment, Channels (waterways), Quaternary deposits.

41-4016
Ground probing radar investigations of massive ground ice and near surface geology in continuous permafrost.
Dallimore, S.R., et al, *Canada. Geological Survey. Paper*, 1987, 87-1A, p.913-918, 7 refs., With French summary.
Davis, J.L.
Ground ice, Continuous permafrost, Radar echoes, Ice detection, Sounding, Geology, Permafrost depth, Canada—Northwest Territories—Richard Island.

41-4017
Rock avalanche from the peak of Mount Meager, British Columbia.
Evans, S.G., *Canada. Geological Survey. Paper*, 1987, 87-1A, p.929-933, 5 refs., With French summary.
Landslides, Rock mechanics, Glacier surfaces, Geology, Mountains, Photography, Volcanoes, Canada—British Columbia—Meager Mountain.

41-4018
Cone penetration tests of the nearshore zone sediments off Richards Island, Northwest Territories.
Kurfurst, P.J., *Canada. Geological Survey. Paper*, 1987, 87-1A, p.939-944, With French summary.
Penetration tests, Bottom sediment, Ocean bottom, Ice cover effect, Shear strength, Boreholes, Pipelines, Computer applications, Equipment, Beaufort Sea.

41-4019
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Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987, Ottawa, Ministry of Transportation and Communications, July 1987, 1027p. (2 vols.), With Japanese summaries. Refs. passim. For individual papers see 41-4020 through 41-4051.
Paving, Cold weather construction, Winter maintenance, Winter concreting, Cracking (fracturing), Cold weather performance, Bitumens, Pavements, Thermal stresses, Meetings, Countermeasures.

41-4020
Investigation on the straight asphalt properties of Japan.
Iijima, T., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.1-36, With Japanese summary.
Ushio, S., Itoh, M., Abe, Y.
Paving, Bitumens, Cold weather tests, Construction materials, Pavements, Roads, Japan.

41-4021
Selection of paving asphalt cements for low temperature service.
Robertson, W.D., Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.41-82, 29 refs., With Japanese summary.
Paving, Cold weather construction, Cracking (fracturing), Bitumens, Cement admixtures, Thermal stresses, Design, Climatic factors, Tensile properties, Cold weather performance.

41-4022
Changes in properties of asphalt concretes due to aging.
Sato, K., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.85-116, 1 ref., With Japanese summary.
Hachiya, Y., Abe, Y.
Concrete strength, Bituminous concretes, Pavements, Cracking (fracturing), Time factor, Mechanical properties, Thermal stresses, Models, Airports.

41-4023
Initial cooling of hot-mix asphalt concrete mats: field verification of a computer model.
White, S., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.117-146, 9 refs., With Japanese summary.
Bituminous concretes, Concrete admixtures, Cooling rate, Pavements, Concrete strength, Cold weather construction, Models, Computer applications, Temperature effects, Time factor.

41-4024
Pen-Vis number (PVN) as a measure of paving asphalt temperature susceptibility and its application to pavement design.
McLeod, N.W., Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.147-240, 29 refs., With Japanese summary.
Bitumens, Paving, Cold weather construction, Cracking (fracturing), Cold weather performance, Temperature effects, Pavements, Stability, Winter concreting, Freezing indexes, Penetration.

41-4025
Temperature distributions in asphalt pavements.
Himeno, K., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.241-275, 16 refs., With Japanese summary.
Watanabe, T., Maruyama, T.
Pavements, Bitumens, Heat transfer, Temperature distribution, Solar radiation, Wind velocity, Precipitation (meteorology), Aggregates, Structural analysis, Temperature variations.

41-4026
Transient effects in low temperature induced failure and fracture initiation in a pavement structure.
Selvadurai, A.P.S., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.277-301, 11 refs., With Japanese summary.
Phang, W.A., Au, M.C.
Cold weather performance, Pavements, Thermal conductivity, Bitumens, Fracturing, Analysis (mathematics), Structural analysis, Thermal stresses, Models, Time factor.

41-4027
Cold climate performance of Canadian airport pavements.
Haas, R., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.303-332, 11 refs., With Japanese summary.
Lee, H., Meyer, F., Argue, G.
Pavements, Cold weather performance, Cracking (fracturing), Airports, Temperature effects, Models, Countermeasures.

41-4028
Applications of a method for evaluation of low temperature tensile properties of asphalt concrete.
Anderson, K.O., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.333-366, 17 refs., With Japanese summary.
Leung, S.C.
Bituminous concretes, Cold weather performance, Tensile properties, Pavements, Tests, Temperature effects, Construction materials, Concrete strength, Stress strain diagrams.

41-4029
Evaluation of bearing capacity of asphalt pavement with low-temperature transverse crackings.
Kasahara, A., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.367-396, 10 refs., With Japanese summary.
Yoshida, H.
Pavements, Bitumens, Cold weather performance, Bearing strength, Cracking (fracturing), Tests, Loads (forces), Elastic properties.

41-4030
Laboratory investigations of low temperature cracking susceptibility of asphalt concrete.
Janoo, V.C., et al, MP 2233, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.397-415, 8 refs., With Japanese summary.
Chamberlain, E.J.
Bituminous concretes, Low temperature tests, Concrete strength, Thermal stresses, Cracking (fracturing), Cement admixtures, Strains, Temperature effects, Rheology, Tests, Tensile properties.
A laboratory test program to study the behavior of asphalt concrete at low temperatures is underway at USA CRREL. The effects on strength and thermal stresses and strains, of temperature, temperature cycling, tensile creep, types of asphalt cement and later the influence of additives are included in this investigation. The results from these tests will be used to evaluate, validate and modify two existing thermal cracking models. After verification in the laboratory, the models will be tested in the field. If either model is successful, it is expected that one will be incorporated in the overall Corps of Engineers design procedures for asphalt concrete pavements.

41-4031
Results of laboratory tests on AMIR compacted asphalt slabs.
El Halim, A.O., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.417-451, 11 refs., With Japanese summary.
Mshana, G., Sithole V.
Bitumens, Cold weather performance, Cracking (fracturing), Compaction, Tensile properties, Deformation, Countermeasures, Models, Tests, Density (mass/volume).

41-4032
Thermally associated fatigue crack growth through asphalt overlays: an experimental investigation.
Joseph, P., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.453-491, 23 refs., With Japanese summary.
Haas, R., Phang, W.A.
Bitumens, Crack propagation, Cold weather performance, Thermal stresses, Pavements, Countermeasures, Experimentation, Fracturing, Stresses, Design.

41-4033
Investigation of reparation for thermal cracking in asphalt pavements.
Kubo, H., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.493-510, 2 refs., With Japanese summary.
Kumagai, S.
Pavements, Bitumens, Cracking (fracturing), Thermal stresses, Cold weather performance, Road maintenance, Frost heave, Countermeasures, Sealing.

41-4034
Factor analyses of damage modes of asphalt pavements.
Fukuda, T., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.511-523, With Japanese summary.
Kagotani, M., Murai, S.
Pavements, Bitumens, Cracking (fracturing), Damage, Environments, Forecasting.

41-4035
Adhesive layer for overlay with thin concrete blocks.
Inuzuka, M., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.525-540, 3 refs., With Japanese summary.
Sato, I.
Bitumens, Concrete pavements, Cold weather performance, Adhesion, Thermal stresses, Models, Protection, Surface properties, Temperature effects, Analysis (mathematics).

41-4036
Use of rubber-modified asphalt pavements in cold regions.
Takallou, H.B., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.541-574, 16 refs., With Japanese summary.
Hicks, R.G., Esch, D.C.
Bitumens, Pavements, Cold weather performance, Rubber, Admixtures, Cracking (fracturing), Skid resistance, Noise (sound), Damage, Countermeasures, Road icing.

41-4037
Role of extruded expanded polystyrene in Ontario's provincial transportation system.
MacMaster, J.B., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.1, Ottawa, Ministry of Transportation and Communications, July 1987, p.575-618, 10 refs., With Japanese summary.
Wrong, G.A.
Frost heave, Pavements, Resins, Frost resistance, Damage, Design, Countermeasures, Construction materials.

41-4038
Improvement of asphalt pavement durability by surface treatment of coarse aggregates.
Anzaki, Y., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.619-636, With Japanese summary.
Ikeda, T.
Bitumens, Pavements, Construction materials, Silane, Road maintenance, Surface properties, Strength, Aggregates, Countermeasures, Damage.

41-4039
Consequences of deferred maintenance on transverse cracks.
Chong, G.J., Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.637-686, 2 refs., With Japanese summary.
Bitumens, Pavements, Cold weather performance, Road maintenance, Cracking (fracturing), Deformation, Damage, Surface roughness, Sealing, Countermeasures.

41-4040
Crack sealing: an evaluation of a few compounds and of a variety of application conditions.
Lupien, C., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.689-718, 6 refs., With Japanese summary.
Roireau, M., Vezina, D.
Pavements, Cracking (fracturing), Sealing, Cold weather performance, Climatic factors, Composition, Road maintenance, Countermeasures.

41-4041
Repair of pavement in tunnels (using precast reinforced concrete slabs).
Suda, T., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.719-733, With Japanese summary.
Takeshige, T.
Reinforced concretes, Pavements, Snow accumulation, Tunnels, Tires, Damage, Road maintenance, Countermeasures.

41-4042
Bituminous surface treatments in northern Canada.
MacLeod, D.R., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.735-772, 13 refs., With Japanese summary.
Hidinger, W.P., Lidgren, R.A.
Pavements, Bitumens, Cold weather construction, Road maintenance, Surface properties, Subgrades, Roadbeds, Models, Gravel, Damage, Cost analysis.

41-4043
Present situation and evaluation of *in-situ* surface and base recycling.
Tada, H., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.773-811, 6 refs., With Japanese summary.
Kono, H., Anzaki, Y., Yoshikane, H.
Pavements, Bitumens, Road maintenance, Surface properties, Design, Waste treatment, Construction, Penetration.

41-4044
Characterization of recycled asphalt mixtures and their pavement performance.
Yamada, M., Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.813-828, 7 refs., With Japanese summary.
Pavements, Bitumens, Surface properties, Strength, Waste treatment, Penetration.

41-4045
Performance of high ratio recycled pavements in northern Ontario.
McLuckie, R.F., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.829-865, 10 refs., With Japanese summary.
Korgemagi, P., Villneff, H.C.
Bitumens, Pavements, Cold weather construction, Waste treatment, Cements, Penetration.

41-4046
Recycling of pavement *in-situ* in Japan.
Kohno, H., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.867-892, 8 refs., With Japanese summary.
Suyama, T.
Pavements, Bitumens, Road maintenance, Waste treatment, Admixtures, Equipment, Japan.

41-4047
In-place surface recycling on expressways.
Tsuchiya, K., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.893-915, 5 refs., With Japanese summary.
Iwata, H., Nogami, K.
Road maintenance, Pavements, Bitumens, Surface properties, Waste treatment, Damage, Countermeasures.

41-4048
New development in Japan's pavement management process.
Enomoto, M., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.917-948, With Japanese summary.
Anzaki, Y., Kikukawa, S.
Pavements, Road maintenance, Models, Forecasting, Computer programs.

41-4049
Measurement and maintenance of runway friction at Canadian airfields.
Argue, G.H., et al, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.949-979, With Japanese summary.
Denyes, B.B., Levitsky, W.
Road maintenance, Airports, Runways, Winter maintenance, Remote sensing, Snow removal, Ice removal, Ice control, Friction, Tires.

41-4050
Statement of research needs to address airport pavement distress.
Vinson, T.S., et al, MP 2234, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.981-1012, 11 refs., With Japanese summary.
Berg, R.L., Tomita, H.
Airports, Cold weather performance, Pavements, Cracking (fracturing), Frost heave, Ice cover effect, Snow cover effect, Thermal stresses, Bearing strength, Freeze thaw cycles, Damage, Drainage.
In early fall 1984, the Federal Aviation Administration (FAA), funded the U.S. Army Cold Regions Research and Engineering Laboratory (USACRREL) to conduct a study of airport pavements in cold regions of the United States. At USACRREL's request, the American Association of Airport Executives (AAAE) sent a questionnaire to over 325 general aviation airports in cold regions. The results from over 200 responses were compiled and evaluated and over 20 airport managers were contacted for additional details. Site visitations were made to 36 airports to obtain additional information. The most common pavement problems identified in the study were associated with non-traffic-related phenomena and included: (1) pre-existing cracks reflecting through asphalt concrete overlays, (2) thermal cracking and (3) longitudinal cracking. Most of the airports experienced (1) water pumping up through cracks and joints in the pavements during spring thaw, or (2) additional roughness due to differential frost heave in the winter, or both problems. Many airport managers reported that debris was generated at cracks during the winter and spring. Pavement problems can often be traced to the evolutionary history of general aviation airports and the lack of consideration for site drainage. Based on the recognition of these problems, several future research programs are identified.

41-4051
Summary of proper cold weather pavement repair methods.
Eaton, R.A., MP 2235, Paving in Cold Areas Mini Workshop, 3rd, Ottawa, Ontario, July 20-22, 1987. Proceedings, Vol.2, Ottawa, Ministry of Transportation and Communications, July 1987, p.1013-1027, 5 refs., With Japanese summary.
Pavements, Cold weather construction, Bituminous concretes, Damage, Road maintenance, Freeze thaw cycles, Drainage, Construction materials, Compaction, Equipment, Sealing.
Currently available portable construction equipment can provide hot asphalt concrete on a year-round basis in cold regions. This permits rapid and permanent repairs to pavements if potholes occur or utility cuts are made when the local hot asphalt concrete plants are closed for the winter.

41-4052
Ice particle evolution in the anvil of a severe thunderstorm during CCOP.
Heymsfield, A.J., *Journal of the atmospheric sciences*, Nov. 1, 1986, 43(21), p.2463-2478, 23 refs.
Ice formation, Supercooled clouds, Ice spectroscopy, Water content, Particles, Thunderstorms, Wind factors, Temperature effects, Ice growth, Radar echoes.

41-4053
Sensitivity experiments with a model of the ice age cycle: the response to Milankovitch forcing.
Hyde, W.T., et al, *Journal of the atmospheric sciences*, May 1987, 44(10), p.1351-1374, 35 refs.
Peltier, W.R.
Ice age theory, Climatic changes, Land ice, Ice mechanics, Glacier flow, Models, Ice physics, Pleistocene, Paleoclimatology.

41-4054
On the satellite bands accompanying the OH and OD stretching fundamentals of isotopically dilute HDO in ice Ih.
Falk, M., *Journal of chemical physics*, July 1, 1987, 87(1), p.28-30, 21 refs.
Ice physics, Hydrogen bonds, Infrared spectroscopy, Heavy water, Models.

41-4055
Thermally induced heave beneath chilled pipelines in frozen ground.
Nixon, J.F., *Canadian geotechnical journal*, May 1987, 24(2), p.260-266, With French summary. 18 refs.
Frost heave, Frozen ground mechanics, Underground pipelines, Soil water migration, Permafrost beneath structures, Temperature effects, Permeability.

41-4056
Potential urban effects on precipitation in the winter and transition seasons at St. Louis, Missouri.
Huff, F.A., et al, *Journal of climate and applied meteorology*, Dec. 1986, 25(12), p.1887-1907, 14 refs.
Changnon, S.A., Jr.
Snowfall, Precipitation (meteorology), Snowstorms, Rain, Synoptic meteorology, Seasonal variations, United States—Missouri—St. Louis.

41-4057
Further exploratory analysis of the Bridger Range winter cloud seeding experiment.
Super, A.B., *Journal of climate and applied meteorology*, Dec. 1986, 25(12), p.1926-1933, 7 refs.
Cloud seeding, Silver iodide, Cloud physics, Winter, Temperature effects, Wind factors, United States—Montana—Bridger Mountain Range.

41-4058
Hailstone shape factor and its relation to radar interpretation of hail.
Knight, N.C., *Journal of climate and applied meteorology*, Dec. 1986, 25(12), p.1956-1958, 14 refs.
Hailstone growth, Radar echoes, Heat transfer, Surface properties, Polarization (waves).

41-4059
Numerical modeling of hailstorms and hailstone growth. Part 1: Preliminary model verification and sensitivity tests.
Farley, R.D., et al, *Journal of climate and applied meteorology*, Dec. 1986, 25(12), p.2014-2035, 58 refs.
Orville, H.D.
Hailstone growth, Ice formation, Cloud seeding, Storms, Mathematical models, Particles, Radar echoes, Thermodynamics, Precipitation (meteorology).

41-4060
Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987. Summaries of reports. Vol.2. [Tezisy dokladov, Vyp.2], Soveshchanie geografov Sibiri i Dal'nego Vostoka o roli geografii v uskorenii nauchno-tekhnicheskogo progressa, 8th, Irkutsk, 1987, Irkutsk, 1986, 166p., In Russian. For selected summaries see 41-4061 through 41-4066.
Vorob'ev, V.V., ed, Khudiakov, G.I., ed.
Shore erosion, Cryogenic soils, Transportation, Shoreline modification, Tundra, Soil erosion, Slope processes, Permafrost distribution, Mapping, Classifications, Meteorological factors, Arctic Ocean.

41-4061
Geographic studies of coastal zones of Arctic seas. [Prikladnye aspekty geograficheskikh issledovaniĭ beregovoĭ zony arkticheskikh morei],
Novikov, V.N., et al, Soveshchanie geografov Sibiri i Dal'nego Vostoka o roli geografii v uskorenii nauchno-tekhnicheskogo progressa, 8th, Irkutsk, 1987. Tezisy dokladov. Vyp.2 (Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987. Summaries of reports. Vol.2), Irkutsk, 1986, p.5-7, In Russian.
Popov, B.A., Sovershaev, V.A.
Shore erosion, Shoreline modification, Geomorphology, Meteorological factors, Arctic Ocean.

41-4062
Studies of seasonal rhythms of nature, related to combined economic development of the northern Ob'-Yenisey region of the North. [Issledovanie sezonnoĭ ritmiki prirody v sviazi s kompleksnym osvoeniem Ob'-Eniseĭskogo Severa],
Okisheva, L.N., Soveshchanie geografov Sibiri i Dal'nego Vostoka o roli geografii v uskorenii nauchno-tekhnicheskogo progressa, 8th, Irkutsk, 1987. Tezisy dokladov. Vyp.2 (Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987. Summaries of reports. Vol.2), Irkutsk, 1986, p.17-19, In Russian.
Subarctic landscapes, Microclimatology, Seasonal variations, Economic development.

41-4063
Stability of tundra landscapes under transport loads. [Ustoĭchivost' landshaftov tundry k transportnym nagruzkam],
Zimov, S.A., et al, Soveshchanie geografov Sibiri i Dal'nego Vostoka o roli geografii v uskorenii nauchno-tekhnicheskogo progressa, 8th, Irkutsk, 1987. Tezisy dokladov. Vyp.2 (Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987. Summaries of reports. Vol.2), Irkutsk, 1986, p.22-23, In Russian.
Chuprynin, V.I.
Cryogenic soils, Transportation, Tundra, Paludification, Soil erosion, Revegetation.

41-4064
Regional investigations of thermal erosion. [Regional'nye issledovaniia termoerozii],
Voskresenskiĭ, K.S., et al, Soveshchanie geografov Sibiri i Dal'nego Vostoka o roli geografii v uskorenii nauchno-tekhnicheskogo progressa, 8th, Irkutsk, 1987. Tezisy dokladov. Vyp.2 (Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987. Summaries of reports. Vol.2), Irkutsk, 1986, p.61-63, In Russian.
Zemchikhin, V.E., Chistov, S.V.
Tundra, Forest tundra, Soil erosion, Thermokarst, Gullies.

41-4065
Dangerous glacial slope processes in mountain ecosystems of Siberia. [Opasnye gliatsial'nye sklonovye protsessy v gornykh ekosistemakh Sibiri],
Laptev, M.N., et al, Soveshchanie geografov Sibiri i Dal'nego Vostoka o roli geografii v uskorenii nauchno-tekhnicheskogo progressa, 8th, Irkutsk, 1987. Tezisy dokladov. Vyp.2 (Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987. Summaries of reports. Vol.2), Irkutsk, 1986, p.63-65, In Russian.
Lapteva, N.I.
Slope processes, Solifluction, Avalanches, Glacial erosion, Topography, Vegetation, Alpine landscapes.

41-4066
Geocryological regionalization of the Far Eastern economic region. [Merzlotnoe raĭonirovanie dal'nevostochnogo ekonomicheskogo raĭona],
Shats, M.M., Soveshchanie geografov Sibiri i Dal'nego Vostoka o roli geografii v uskorenii nauchno-tekhnicheskogo progressa, 8th, Irkutsk, 1987. Tezisy dokladov. Vyp.2 (Conference of geologists, from Siberia and the Far East, on the role of geography in furthering scientific and technical progress, 8th, Irkutsk, 1987. Summaries of reports. Vol.2), Irkutsk, 1986, p.71, In Russian.
Permafrost distribution, Mapping, Permafrost structure, Classifications.

41-4067
Use of a reinforced earth slab to reduce embankment loads at Auke Bay, Alaska.
Elias, V., et al, *Alaska. Dept. of Transportation and Public Facilities. Report*, Dec. 1981, AK-RD-82-19, 21p., 5 refs.
Johnson, E.G.
Embankments, Earth fills, Loads (forces), Construction materials, Design criteria, United States—Alaska—Auke Bay.

41-4068
Some aspects of the environmental effects of air cushion vehicle operations in the Arctic.
Fancy, S.G., *Alaska. Dept. of Transportation and Public Facilities. Report*, Feb. 1982, AK-RD-82-28, 27p., Refs. p.20-24.
Air cushion vehicles, Environmental impact, Soil trafficability, Damage, Vegetation, Cold weather operation.

41-4069
Life cycle costing of paved Alaskan highways. Volume I.
Kulkarni, R., et al, *Alaska. Dept. of Transportation and Public Facilities. Report*, June 1982, AK-RD-83-05, 76p., 22 refs.
Pavements, Cost analysis, Permafrost beneath roads, Thaw weakening, Design, Surface roughness, Cracking (fracturing), Settlement (structural), Road maintenance, United States—Alaska.

41-4070
***In-situ* thermal conductivity measurements.**
Atkins, R.T., *Alaska. Dept of Transportation and Public Facilities. Report*, June 1983, FHWA-AK-RD-84-06, MP 2214, 38p., 3 refs.
Construction materials, Thermal conductivity, Soil physics, Thermal insulation, Thermistors.
This report describes a method for using commercially available thermistors to make *in-situ* thermal conductivity measurements with commonly available electronic equipment. The emphasis is on use of a single thermistor to measure thermal conductivities of soils and building insulations. Calibration techniques are explained and examples provided. Limitations on this technique are discussed, including material grain size, amount of material needed for a valid measurement, and temperature stability necessary. Specific examples of the use of this technique are provided for both soil measurements and building material measurements. Data analysis is discussed, including a statistical approach to finding the thermal conductivity in large volumes of material.

41-4071
Application of geotextiles in Alaska.
Johnson, E.G., *Alaska. Dept. of Transportation and Public Facilities. Report*, Aug. 1983, FHWA-AK-84-07, 64p., Refs. passim.
Pavements, Embankments, Paving, Bitumens, Construction materials, Cracking (fracturing), Airports, Waterproofing, United States—Alaska.

41-4072
Interaction of gravel fills, surface drainage, and culverts with permafrost terrain.
Brown, J., et al, *Alaska. Dept. of Transportation and Public Facilities. Report*, Jan. 1984, AK-RD-84-11, MP 2215, 35p., 24 refs.
Brockett, B.E., Howe, K.E.
Permafrost beneath roads, Culverts, Embankments, Drainage, Gravel, Thermal insulation, Thaw depth, Ground thawing, Permafrost thermal properties.
During the summers of 1981 and 1982, the thaw regime of gravel roads and the performance of culverts were observed in the Prudhoe Bay and Kuparuk River oilfields, northern Alaska. This relatively flat to gently rolling coastal plain is covered by shallow lakes, drained lake basins and interconnecting ice-wedge polygons. Depth of seasonal thaw of the predominantly fine-grained soils is less than 50 cm. The permafrost temperature is about -10 C. A combination of visual frost tube readings and temperature measurements were obtained in the roadbed, in an area immediately adjacent to an insulated culvert, and in areas undisturbed by construction. Gravel roads up to 2 m thick thaw completely and thaw penetrates into the consolidated active layer. Where depth of thaw exceeds the thickness of the active layer, ice-rich permafrost begins to thaw. Adjacent to the roads, newly formed surface troughs indicate melting of the underlying ice wedges. Shallow impoundments form on the upslope sides of roads where culverts have not been adequately sited or installed. More standardized practices for culvert placement, installation, and maintenance are desirable to minimize disruption of natural drainage.

41-4073
Application of hot sand for winter ice control—laboratory phase.
Hayhoe, G.F., *Alaska. Dept. of Transportation and Public Facilities. Report*, May 1984, FHWA-AK-RD-85-01, 33p. + append., 3 refs.
Road icing, Ice control, Sanding, Temperature effects, Ice removal, Winter maintenance, Road maintenance, Sands, Tests, Skid resistance.

41-4074
Surface modifications for thawing of permafrost. Interim report.
Esch, D.C., *Alaska. Dept. of Transportation and Public Facilities. Report*, Nov. 1984, FHWA-AK-RD-85-01, 15p., For another source see 38-3511. 10 refs.
Ground thawing, Permafrost thermal properties, Freeze thaw cycles, Surface energy, Cold weather construction, Settlement (structural), Solar radiation, Climatic changes, Carbon dioxide, Thaw depth, Tests.

41-4075
Remote frost depth monitoring.
Connor, B., *Alaska. Dept. of Transportation and Public Facilities. Report*, Dec. 1984, FHWA-AK-RD-85-13, 13p., 3 refs.
Frost penetration, Thaw weakening, Loads (forces), Soil strength, Roads, Monitors, Embankments, Detection.

41-4076
Spatial analysis of snow- and rain-generated high-flows in southern Ontario.
Irvine, K.N., et al, *Canadian geographer*, Summer 1987, 31(2), p.140-149, With French summary. 24 refs.
Drake, J.J.
Runoff, Floods, Snowmelt, Stream flow, Snowfall, Precipitation (meteorology), Rain, Canada—Ontario.

41-4077
Thermal simulation of subsea saline permafrost.
Nixon, J.F., *Canadian journal of earth sciences*, Dec. 1986, 23(12), p.2039-2046, With French summary. 16 refs.
Subsea permafrost, Permafrost thermal properties, Unfrozen water content, Saline soils, Temperature effects, Frozen ground chemistry, Freezing points, Thaw depth, Salinity.

41-4078
Isotopic composition and origin of lacustrine brines in the Arctic.
Pagé, P., et al, *Canadian journal of earth sciences*, Feb. 1987, 24(2), p.210-216, With French summary. 36 refs.
Michaud, J., Ouellet, M., Dickman, M.
Lacustrine deposits, Permafrost depth, Brines, Isotope analysis, Origin, Water chemistry, Oxygen isotopes, Salinity, Canada—Northwest Territories—Arctic Archipelago.

41-4079
Wisconsinan and pre-Wisconsinan ice thicknesses on Ellesmere Island, Canada: inferences from ice cores.
Koerner, R.M., et al, *Canadian journal of earth sciences*, Feb. 1987, 24(2), p.296-301, With French summary. 25 refs.
Fisher, D.A., Paterson, W.S.B.
Ice cores, Drill core analysis, Ice cover thickness, Paleoclimatology, Boreholes, Glaciation, Climatic changes.

41-4080
Sulphide erratics applied to subglacial exploration: St. Elias Mountains, British Columbia.
Day, S.J., et al, *Canadian journal of earth sciences*, Apr. 1987, 24(4), p.723-730, With French summary. 17 refs.
Broster, B.E., Sinclair, A.J.
Subglacial observations, Geochemistry, Minerals, Natural resources, Exploration, Mountains, Canada—British Columbia—Saint Elias Mountains.

41-4081
Breakup of small rivers in the Subarctic.
Woo, M.-K., et al, *Canadian journal of earth sciences*, Apr. 1987, 24(4), p.784-795, With French summary. 27 refs.
Heron, R.
River ice, Ice breakup, Meltwater, Ice jams, Snow melting, Stream flow, Flooding, Computer applications, Canada—Ontario—James Bay.

41-4082
Loading of a large diamicton mass in glacial Lake Maumee III sediments, southwestern Ontario.
Stewart, R.A., *Canadian journal of earth sciences*, Apr. 1987, 24(4), p.844-849, With French summary. 24 refs.
Glacial lakes, Lacustrine deposits, Limnology, Bottom sediment, Geology, Moraines, Sands, Canada—Ontario—Maumee Bay.

41-4083
Procedure for measuring building R-values with thermography and heat flux sensors.
Flanders, S.N., *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1987, SR 87-06, 29p., ADA-180 959, 5 refs.
Thermal insulation, Buildings, Heat flux, Economic analysis, Computer applications, Infrared equipment, Measuring instruments, Tests.
This report describes a procedure for measuring R-values on actual buildings, using thermography, heat flux transducers, and data acquisition equipment. R-values measurement is necessary to optimize investment in additional insulation and permits confirmation of the quality of newly installed insulation.

41-4084
Seasonal variation in marine phytoplankton and ice algae at a shallow antarctic coast site.
Perrin, R.A., et al, *Hydrobiologia*, Mar. 10, 1987, 146(1), p.33-46, Refs. p.45-46.
Lu, P., Marchant, H.J.
Algae, Plankton, Ice composition, Cryobiology, Antarctica—Davis Station.
The phytoplankton population near Davis, Vestfold Hills, was monitored throughout 1982. Chlorophyll-*a* determinations and counts of living cells in both the water column and sea ice demonstrated a marked seasonality in phytoplankton abundance and species composition. From Apr to Oct nanoplanktonic organisms contributed most of the chlorophyll-*a* in both the sea ice and water column. Blooms of diatoms occurred in May, Nov. and Dec. in the bottom of the sea-ice and in Jan. and Feb. in the water column. *Phaeocystis pouchetii* was dominant during Dec. in the water column. Large numbers of dead diatoms were found in winter. The concentrations of nitrate, dissolved inorganic phosphate and dissolved silicate increased throughout the year until Dec., when the concentrations of nitrate and silicate fell sharply, followed a month later by a reduction in phosphate concentration. The diversity of phytoplankton was greatest during the summer months. (Auth.)

41-4085
SPRI review—86; sixtieth annual report: year ending September 1986.
Scott Polar Research Institute, Cambridge, University of Cambridge, 1986, 26p.
Research projects.
The report reviews SPRI activities during 1985-1986 academic year, from field-work programs in both the Arctic and Antarctic to teaching, lecture series to degree seeking students; sea ice studies, glacier geophysics, remote sensing; and developments for 1986-1987. A list of publications is given and library and information services are reviewed; the staff is listed and gifts to the institute are acknowledged. Research abstracts are included.

41-4086
Land reclamation in Siberia (Scientific basis for preservation and use of land resources in Siberia). [Melioratsiia zemel' Sibiri (nauchnye osnovy ispol'zovaniia i okhrany zemel'nykh resursov Sibiri)],
Panin, P.S., ed, Krasnoyarsk, 1984, 193p., In Russian. For selected papers see 41-4087 through 41-4091. Refs. passim.
Land reclamation, Aerial surveys, Mapping, Charts, Spaceborne photography, Geobotanical interpretation, Taiga, Steppes, Chernozem, Meadow soils, Saline soils, Desalting, Sampling, Chemical analysis.

41-4087
Hydromeliorative regionalization of West Siberia from space photographs. [Gidromeliorativnoe raionirovanie Zapadnoĭ Sibiri s pomoshch'iu kosmicheskikh snimkov],
Gorozhankina, S.M., Melioratsiia zemel' Sibiri (nauchnye osnovy ispol'zovaniia i okhrany zemel'nykh resursov Sibiri) (Land reclamation in Siberia (Scientific basis for preservation and use of land resources in Siberia)) edited by P.S. Panin, Krasnoyarsk, 1984, p.16-25, In Russian. 8 refs.
Aerial surveys, Mapping, Spaceborne photography, Geobotanical interpretation, Land reclamation, Swamps, Vegetation factors, Charts.

41-4088
Soil climate in southeastern West Siberia. [Pochvennyĭ klimat iugo-vostoka Zapadnoĭ Sibiri],
Az'muka, T.I., et al, Melioratsiia zemel' Sibiri (nauchnye osnovy ispol'zovaniia i okhrany zemel'nykh resursov Sibiri) (Land reclamation in Siberia (Scientific basis for preservation and use of land resources in Siberia)) edited by P.S. Panin, Krasnoyarsk, 1984, p.26-31, In Russian. 2 refs.
Voronina, L.V.
Cryogenic soils, Mapping, Charts, Frost penetration, Vegetation factors, Soil water migration, Taiga, Steppes.

41-4089
Performance of sub-drainage systems in peat soils of the Baraba lowland. [Issledovanie raboty zakrytogo drenazha na torfianykh pochvakh Barabinskoĭ nizmennosti],
Loginov, I.I., et al, Melioratsiia zemel' Sibiri (nauchnye osnovy ispol'zovaniia i okhrany zemel'nykh resursov Sibiri) (Land reclamation in Siberia (Scientific basis for preservation and use of land resources in Siberia)) edited by P.S. Panin, Krasnoyarsk, 1984, p.51-52, In Russian.
Mukhometzianov, G.I.
Land reclamation, Swamps, Peat, Drainage, Soil freezing, Frost penetration, Drains, Ice jams.

41-4090
Thermal properties of cryogenic meadow-chernozem soils in the Buryat ASSR. [Teplovye svoĭstva lugovo-chernozemnykh merzlotnykh pochv Buriatskoĭ ASSR],
Kulikov, A.I., Melioratsiia zemel' Sibiri (nauchnye osnovy ispol'zovaniia i okhrany zemel'nykh resursov Sibiri) (Land reclamation in Siberia (Scientific basis for preservation and use of land resources in Siberia)) edited by P.S. Panin, Krasnoyarsk, 1984, p.126-130, In Russian. 2 refs.
Water films, Evaporation, Cryogenic soils, Chernozem, Clay soils, Loams, Meadow soils, Heat transfer, Soil temperature, Porosity, Moisture transfer.

41-4091
Salt transfer from soil to snow. [Vynos solei iz pochv v sneg],
Kazantsev, V.A., Melioratsiia zemel' Sibiri (nauchnye osnovy ispol'zovaniia i okhrany zemel'nykh resursov Sibiri) (Land reclamation in Siberia (Scientific basis for preservation and use of land resources in Siberia)) edited by P.S. Panin, Krasnoyarsk, 1984, p.151-155, In Russian. 3 refs.
Snow ice interface, Snowmelt, Seepage, Soil water, Saline soils, Sampling, Chemical analysis.

41-4092
Modelling of continental and sea ice as part of climate models. [Modelirovanie kontinental'nogo i morskogo l'da v modeliakh klimata],
Nagurnyĭ, A.P., *Vsesoiuznyĭ institut nauchnoĭ i tekhnicheskoĭ informatsii. Itogi nauki i tekhniki. Seriia meteorologiia i klimatologiia*, 1986, Vol.13, 104p., In Russian with English table of contents enclosed. 192 refs.
Models, Climatic changes, Land ice, Climatology, Sea ice, Snow cover distribution, Albedo, Records (extremes), Atmospheric circulation.
The three parts of this book cover the general characteristics of the cryosphere, the parametrization of snow-ice cover in climate models, and the modelling of climate in polar regions. Antarctic topography, antarctic ice cover thickness and its effect on heat transfer between the atmosphere and ocean, and the role of the snow and ice cover on global climatic changes are discussed and charts are included. Tabulated results are presented of the reaction of the Arctic and Antarctica in experiments with CO2 on general atmospheric circulation models.

41-4093
Flow and thickness of Riiser-Larsenisen, Antarctica.
Orheim, O., et al, *Oslo. Norsk Polarinstitutt. Skrifter*, 1986, No.187, p.5-22, Refs. p.20 and 22. With Appendix: SPRI radio echo soundings of Riiser-Larsenisen, by D. Drewry.
Drewry, D.
Ice shelves, Radio echo soundings, Rheology, Flow rate, Ice volume, Bottom topography, Antarctica—Riiser-Larsen Ice Shelf.
The Norwegian Antarctic Research Expedition (NARE) 1978/79 used the SPRI Mk IV System fitted in a helicopter to fly 620 km radio echo sounding over the central part of Riiser-Larsenisen, and 100 km across the outer part of Stancomb-Wills Ice Stream. Observed thicknesses of Riiser-Larsenisen decrease from a maximum of 650 m a few km from the grounding line to less than 200 m at the ice front. The Kvitkuven ice rise shows thicknesses between 200 m and 500 m. The thickness data suggest that the ice shelf east of Kvitkuven turns clockwise and flows obliquely to the ice front. The radio echo sounding indicates that the ice shelf has a complex flow regime. Steplike change in thickness of >150 m over a 500 m horizontal distance is observed in the central part of the ice shelf. The records also demonstrate undulations in ice thickness and bottom morphology of 600-700 m wavelength and 50 m amplitude, and various types of rifts and crevasses. Internal layering is recorded at 250-300 m depth within the Kvitkuven ice rise and in the ice shelf upstream of the ice rise. Combination of the NARE data with radio echo sounding data from 1970, provided from the Scott Polar Research Institute, shows that Riiser-Larsenisen has an average thickness of around 300 m, with generally larger thicknesses west of Kvitkuven. The bulk of the inland ice around Vestfjella is 700-1200 m thick. Observed ice thicknesses of Stancomb-Wills Ice Stream range from 135 to 241 m, with no systematic decrease towards the ice front. (Auth. mod.)

41-4094
Absolute movements, mass balance and snow temperatures of the Riiser-Larsenisen Ice Shelf, Antarctica.
Gjessing, Y., et al, *Oslo. Norsk Polarinstitutt. Skrifter*, 1986, No.187, p.23-31, 27 refs.
Wold, B.
Ice shelves, Rheology, Flow rate, Ice accretion, Ice deformation, Mass balance, Snow temperature, Snow density, Antarctica—Riiser-Larsen Ice Shelf.
Accumulation, deformation, absolute velocity, and snow temperatures at 10 m depth have been measured on Riiser-Larsenisen. Accumulation was measured at several points between the ice front and the grounding line, as well as on the top of an ice dome, for the period 1977-1979. Snow density varied from 470 kg/cu m to 510 kg/cu m, and the mean annual accumulation for twelve points on flat ice shelf was 608 kg/sq m/yr. At the top of the 200 m high dome the mean accumulation was only 416 kg/sq m/yr. The velocities varied from 130 m/yr some 10 km from the grounding line to 110 m/yr near the ice front. Bottom melting is about 80% of the total 'ablation' if the ice shelf is in a steady state. Snow temperatures at 10 m depth were measured on the ice shelf, on an ice dome, and at higher elevations inland. The temperature decreases from -16.8 C near the ice front to -19.2 C near the grounding line. At 695 m a.s.l. a few km inland from the grounding line the temperature was -17.7 C, and on the ice dome it was -15.4 C and -16.4 C at 95 and 200 m a.s.l. respectively. These measurements indicate that the mean annual air temperatures, estimated from 10 m deep snow temperatures, apply only to a boundary layer immediately above the surface of the snow. (Auth. mod.)

41-4095
Oxygen isotopes and accumulation rates at Riiser-Larsenisen, Antarctica.
Orheim, O., et al, *Oslo. Norsk Polarinstitutt. Skrifter,* 1986, No.187, p.33-47, 23 refs.
Ice shelves, Ice composition, Oxygen isotopes, Ice accretion, Mass balance, Snow accumulation, Antarctica—Riiser-Larsen Ice Shelf.
Measurements of delta O-18 and beta-activity on eight cores covering up to 20 years of precipitation show that the mean multi-year mass balance at Riiser-Larsenisen is 0.32 m water equivalent (320 kg/cu m). The Kvitkuven ice rise shows the smallest accumulation rates and inter-annual variability. There are no significant correlations in year-to-year variations in accumulation between the eight cores, or between the results at Riiser-Larsenisen and the records at the nearby stations. The mean delta O-18 variations correlate closely with mean annual temperatures, with a relationship = 1.3 per mill C. This agrees well with results from the Antarctic Peninsula. Mean annual temperatures and mean delta for all sites at Riiser-Larsenisen are -17.2 C and -20.2 per mill respectively. Temperature observations and monthly measurements of delta-concentrations in precipitation at Halley Station show that the conditions there are similar to those of Riiser-Larsenisen, with means for different periods of -18.3 C and -19.7 per mill, respectively. However, the precipitation data show higher variability in delta O-18 than the snow firn sections. (Auth. mod.)

41-4096
Inception, growth and decay of the Laurentide Ice Sheet.
Andrews, J.T., et al, *Episodes,* Mar. 1987, 10(1), p.13-15, 38 refs.
Fulton, R.J.
Ice sheets, Glacier mass balance, Sea level, Glacial deposits, Paleoclimatology, Geomorphology, Radioactive age determination.
The link between the antarctic ice sheet and global sea levels is of immense importance to society, as concern grows about a possible worldwide rise of the oceans. One approach to this problem is to study the ice sheet that covered much of North America during the last glacial period. The authors review here some aspects of the birth, growth and disintegration of the Laurentide Sheet. (Ed.)

41-4097
Modern glacimarine environments.
Powell, R.D., *Episodes,* Mar. 1987, 10(1), p.23-25, 25 refs.
Glacial deposits, Sedimentation, Sea ice, Paleoclimatology, Sediments, Meltwater, Oceanography.

41-4098
Holocene glacier fluctuations.
Osborn, G., et al, *Episodes,* Mar. 1987, 10(1), p.26-28, 13 refs.
Davis, P.T.
Glacier oscillation, Paleoclimatology, Moraines, Climatic changes, Sediments.

41-4099
Deluge II and the continent of doom: rising sea level and collapsing antarctic ice.
Hughes, T.J., *Boreas,* 1987, 16(2), p.89-100, 38 refs.
Glacier melting, Sea level, Floods, Ice sheets, Ice melting.
Many cultures in both the Old and New Worlds have preserved legends of a Great Flood. In the Biblical deluge, 'the springs of the great deep broke through and the sluices of heaven opened' (Genesis 7:11). The rise in sea level, as opposed to prolonged rainfall, is a conceivable cause of global flooding because the last stages in collapse of late Wisconsin/Weichselian ice sheets occurred in the late prehistorical period, from 8,000 to 6,000 B.C. A possible mechanism that might collapse large parts of ice sheets in a short time is found in Jakobshavns Isbrae, which drains the west-central part of the Greenland Ice Sheet. This mechanism, called the Jakobshavns Effect, is described and its possible role in Holocene collapse of former Northern Hemisphere ice sheets (Deluge I) and future collapse of parts of the Antarctic Ice Sheet (Deluge II) is examined. Rapid global flooding by this mechanism is extremely unlikely; however, the information needed to eliminate the possibility is lacking. (Auth.)

41-4100
Origin of glacial raft: detachment, transport, deposition.
Ruszczynska-Szenajch, H., *Boreas,* 1987, 16(2), p.101-112, 27 refs.
Glacier flow, Glacial deposits, Icebergs, Paleoclimatology, Origin, Ice floes, Glacial erosion, Moraines, Tectonics.

41-4101
Snow removal in cities, a big problem also in the Soviet Union. [Lo sgombero neve nelle città, un grave problema anche in Union Sovietica],
Dedul, A., *Neve international,* 1987, No.2, p.18-20, In Italian with English summary.
Snow removal, Equipment, Winter maintenance, Road maintenance.

41-4102
Snow emergency: vehicles occasionally equipped with a snow removal blade. [Emergenza neve: veicoli attrezzati occasionalmente con lama spartineve],
Battistoni, R., et al, *Neve international,* 1987, No.2, p.21-25, In Italian with English summary.
Sciallis, G.
Vehicles, Snow removal, Equipment, Road maintenance, Winter maintenance.

41-4103
Spring: time to demonstrate methods of snow removal. [Primavera: tempo di dimostrazioni di sgombero neve],
Bilotta, A., *Neve international,* 1987, No.2, p.26-34, In Italian.
Snow removal, Equipment, Winter maintenance, Road maintenance.

41-4104
New types of foundations for snow bridges. [Nuovi tipi di fondazioni per i ponti da neve],
Benussi, G., *Neve international,* 1987, No.2, p.44-46, In Italian with English summary.
Snow fences, Foundations, Snow accumulation, Countermeasures.

41-4105
Ski areas and roads protected by precautionary defense from avalanches. [Protezione delle aree sciistiche e delle rotabili mediante la difesa preventiva dalle valanghe],
Minetti, G., *Neve international,* 1987, No.2, p.47-50, In Italian with English summary.
Avalanche formation, Avalanche triggering, Snow removal, Winter maintenance, Protection, Countermeasures.

41-4106
Description and interpretation of geologic materials from shotholes drilled for the Trans-Alaska Crustal Transect Project, Copper River basin, Alaska, May 1985.
Odum, J.K., et al, *U.S. Geological Survey. Open-file report,* 1986, No.86-408, 18p., 15 refs.
Yehle, L.A., Schmoll, H.R., Gilbert, C.
Geology, Glacial deposits, Boreholes, Pleistocene, Seismic refraction, Moraines, Stratigraphy, United States—Alaska—Copper River.

41-4107
Temporal and spatial character of newly formed ice gouges in eastern Harrison Bay, Alaska, 1977-1982.
Rearic, D.M., *U.S. Geological Survey. Open-file report,* 1986, No.86-391, 52p., Refs. p.19-22.
Ice scoring, Bottom topography, Ocean bottom, Sea ice, Bottom morphology, Seasonal variations, United States—Alaska—Harrison Bay.

41-4108
Maximum river runoff in the Angara basin. [Maksimal'nyĭ stok rek basseĭna Angary],
Leksakova, V.D., Novosibirsk, Nauka, 1987, 132p., In Russian with abridged English table of contents enclosed. Refs. p.93-98.
River basins, Hydraulic structures, Runoff, Floods, Runoff forecasting, Permafrost distribution, Permafrost beneath rivers, Permafrost hydrology, Hydrography, Economic development.

41-4109
Biologic activity of forest soils. [Biologicheskaia aktivnost' lesnykh pochv],
Korsunov, V.M., ed, Krasnoyarsk, 1985, 122p., In Russian. For selected papers see 41-4110 through 41-4112. Refs. passim.
Podsol, Forest soils, Bacteria, Cryogenic soils, Fungi, Soil microbiology, Biomass, Soil formation, Soil chemistry, Taiga.

41-4110
Microbiocenoses and biologic activity in forest soils of the Angara-Yenisey region. [Mikrobiotsenozy i biologicheskaia aktivnost' lesnykh pochv Angaro-Eniseĭskogo regiona],
Sorokin, N.D., et al, Biologicheskaia aktivnost' lesnykh pochv (Biologic activity of forest soils) edited by V.M. Korsunov, Krasnoyarsk, 1985, p.35-47, In Russian. 20 refs.
Gorbachev, V.N., Gigolian, D.K.
Soil microbiology, Forest soils, Soil formation, Seasonal freeze thaw, Frost penetration, Soil composition, Soil chemistry.

41-4111
Biologic activities of pine forest soils in the Irkutsk Priangar'ye. [Biologicheskaia aktivnost' pochv sosnovykh lesov Irkutskogo Priangar'ia],
Popova, E.P., Biologicheskaia aktivnost' lesnykh pochv (Biologic activity of forest soils) edited by V.M. Korsunov, Krasnoyarsk, 1985, p.47-54, In Russian. 10 refs.
Taiga, Forest soils, Soil microbiology, Soil formation, USSR—Angara River.

41-4112
Microflora and the biologic activity of soils in the Lower Angara depression. [Mikroflora i biologicheskaia aktivnost' pochv Nizhneangarskogo ponizheniia],
Vishniakova, Z.V., et al, Biologicheskaia aktivnost' lesnykh pochv (Biologic activity of forest soils) edited by V.M. Korsunov, Krasnoyarsk, 1985, p.88-101, In Russian. 21 refs.
Makhotina, O.P.
Forest soils, Podsol, Cryogenic soils, Soil microbiology, Bacteria, Fungi, Biomass, Soil chemistry.

41-4113
Regional landscape-geochemical investigations. [Regional'nye landshaftno-geokhimicheskie issledovaniia],
Nechaeva, E.G., ed, Irkutsk, 1986, 159p., In Russian. For selected paper see 41-4114. 6 refs.
Snytko, V.A., ed.
Dust control, Economic development, Environmental impact, Air pollution, Water pollution, Snow composition, Impurities, Mining.

41-4114
Geochemical evaluation of the environmental impact of human activities. [Geokhimicheskaia otsenka antropogennogo vozdeĭstviia na prirodnuiu sredu],
Davydova, N.D., Regional'nye landshaftno-geokhimicheskie issledovaniia (Regional landscape geochemical investigations) edited by E.G. Nechaeva and V.A. Snytko, Irkutsk, 1986, p.135-143, In Russian. 6 refs.
Snow surveys, Dust control, Snow cover distribution, Pollution, Snow composition, Mining, Economic development.

41-4115
Soil-melioration studies in Karelia. [Pochvenno-meliorativnye issledovaniia v Karelii],
Nesterenko, I.M., ed, Petrozavodsk, 1986, 144p., In Russian. For selected papers see 41-4116 and 41-4117. Refs. passim.
Peat, Cryogenic soils, Organic soils, Decomposition, Soil microbiology, Soil composition, Soil chemistry.

41-4116
Studying comparative intensity of peat mineralization in soils of the Kola Peninsula and southern Karelia. [Sravnitel'noe izuchenie intensivnosti mineralizatsii torfa v pochvakh Kol'skogo poluostrova i IUzhnoĭ Karelii],
Pereverzev, V.N., et al, Poschvenno-meliorativnye issledovaniia v Karelii (Soil-melioration studies in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1986, p.64-72, In Russian. 17 refs.
Sin'kevich, E.I.
Soil chemistry, Cryogenic soils, Organic soils, Soil composition, Peat, Decomposition.

41-4117
Calcium in the peat soils of northern Europe. [Kal'tsiĭ v torfianykh pochvakh Evropeĭskogo Severa],
Sin'kevich, E.I., Pochvenno-meliorativnye issledovaniia v Karelii (Soil melioration studies in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1986, p.72-84, In Russian. 39 refs.
Swamps, Cryogenic soils, Organic soils, Soil microbiology, Peat, Soil composition, Chemical composition.

41-4118
Thin forest zone of the Upper Kolyma (area of the Kolyma Power Station construction). [Poias redkolesiĭ verkhoviĭ Kolymy (raĭon stroitel'stva Kolymskoĭ GES)],
Berman, D.I., ed, Vladivostok, 1985, 160p., In Russian. For selected papers see 41-4119 through 41-4121. Refs. passim.
Soil formation, Cryogenic soils, River basins, Soil classification, Microclimatology, Landscape development, Maps, Lakes, Permafrost beneath lakes, Microbiology, Plankton, Algae, Atmospheric circulation, Soil temperature, Vegetation factors, Snow cover effect.

41-4119
Thermal regime of upper soil layers in basic ecosystems of the thin-forest belt in the Upper Kolyma basin. [Termicheskiĭ rezhim verkhnikh sloev pochvy v osnovnykh ekosistemakh poiasa redkolesiĭ basseĭna Verkhneĭ Kolymy],
Alfimov, A.V., Poias redkolesiĭ verkhoviĭ Kolymy (raĭon stroitel'stva Kolymskoĭ GES) (Thin forest zone of the Upper Kolyma (construction site of the Kolyma Power Plant)) edited by D.I. Berman, Vladivostok, 1985, p.9-29, In Russian. 13 refs.
Forest land, Cryogenic soils, Soil air interface, Permafrost distribution, River basins, Microclimatology, Soil temperature, Vegetation factors, Atmospheric circulation, Snow cover effect, Heat transfer.

41-4120
Soil cover of the Sibit-Tyellakh river basin. [Pochvennyĭ pokrov basseĭna reki Sibit-Tyellakh],
Mazhitova, G.G., Poias redkolesiĭ verkhoviĭ Kolymy (raĭon stroitel'stva Kolymskoĭ GES) (Thin forest zone of the Upper Kolyma (construction site of the Kolyma Power Plant)) edited by D.I. Berman, Vladivostok, 1985, p.30-43, In Russian. 16 refs.
Cryogenic soils, Soil formation, Cryogenic structures, Microrelief, Microstructure, Soil classification, Landscape development, Mapping, Charts.

41-4121
Diatomaceous algae (periphyton and phytobenthos) in water bodies of the flooding zone of the Kolyma Power Plant. [Diatomovye vodorosli (perifiton i fitobentos) vodoemov zony zatopleniia Kolymskoĭ GES],
Kharitonov, V.G., Poias redkolesiĭ verkhoviĭ Kolymy (raĭon stroitel'stva Kolymskoĭ GES) (Thin forest zone of the Upper Kolyma (construction site of the Kolyma Power Plant)) edited by D.I. Berman, Vladivostok, 1985, p.91-105, In Russian. 28 refs.
Plankton, Plant ecology, Algae, Plant physiology, Lakes, Swamps, Ecosystems, Microbiology, Permafrost distribution.

41-4122
Improving the performance of ripper-equipped bulldozers under conditions of Siberia and the North. [Povyshenie effektivnosti raboty bul'dozerov s rykhliteliami v usloviiakh Severa i Sibiri],
Primerov, S.N., et al, *Stroitel'nye i dorozhnye mashiny*, Mar. 1987, No.3, p.26-27, In Russian. 2 refs.
Kravchenko, IU.F., Obidin, A.D., Polovinko, V.A.
Earthwork, Construction equipment, Permafrost, Excavation.

41-4123
Methods of acting on the state of stress of massive concrete hydraulic structures. [Metody vozdeĭstviia na napriazhennoe sostoianie betonnykh massivov gidrotekhnicheskikh sooruzheniĭ],
Garkun, L.M., et al, Moscow, Energoatomizdat, 1987, 111p., In Russian with abridged English table of contents enclosed. 45 refs.
Hydraulic structures, Dams, Concrete structures, Concrete freezing, Frost resistance, Thermal regime, Concrete strength, Winter concreting.

41-4124
Seven expeditions to Spitsbergen. [Sem' ekspeditsiĭ na Shpitsbergen],
Koriakin, V.S., Moscow, Znanie, 1986, 176p., In Russian with abridged English table of contents enclosed.
Drilling, Expeditions, Glaciology, Ice drills, Ice cores, Ice surveys, Isotope analysis, Mountain glaciers, Sea ice, Radar echoes, Glacier ice, Sounding, Ice composition, Ice structure.

41-4125
Snow blizzard in summertime—random notes on observations in Antarctica. [Baofengxue de xiatian—Nanji kaocha sanjii],
Jin, T., Beijing, Guangming Daily Press, 1986, 216p., In Chinese.
Snowstorms, Expeditions, Antarctica—Great Wall Station.
This book contains a somewhat rambling but comprehensive, account of the experiences of the Chinese research group which visited Antarctica in 1984/85. The group consisted of 591 members who left Shanghai in mid-Nov. 1984 on two ships, the *Xiangyanghong No.10* and the *J121*. Numerous photographic illustrations show activities of the members of the group and of the scenery and living conditions of Antarctica. An account is given of a big storm experienced on the Bellingshausen Sea (Chap. 15). Chap. 11 describes a big snow blizzard at the great Wall Station on King George Island. The group returned to Shanghai on Apr. 10, 1985, after a voyage of 142 days, covering 48,995 km.

41-4126
Melting temperature of ice at positive and negative pressures.
Henderson, S.J., et al, *Journal of physical chemistry*, May 21, 1987, 91(11), p.3069-3072, 24 refs.
Speedy, R.J.
Ice melting, Melting points, Pressure, Ice water interface, Phase transformations, Heavy water, Temperature effects, Analysis (mathematics).

41-4127
Avalanche hazard zoning in Vail, Colorado: the use of scientific information in the implementation of hazard reduction strategies.
Oaks, S.D., et al, *Mountain research and dvelopment*, May 1987, 7(2), p.157-168, With French and German summaries. 32 refs.
Dexter, L.
Avalanche formation, Damage, Countermeasures, Mapping, Distribution, Mountains, Statistical analysis, United States—Colorado—Vail.

41-4128
Ice and fog: detection and warning systems. December 1985-November 1986 (citations from the NTIS database).
U.S. National Technical Information Service, Springfield, VA, Nov. 1986, 33p. PB85-871 465.
Ice detection, Aircraft icing, Fog formation, Road icing, Bibliographies, Remote sensing, Warning systems, Bridges, Sea ice, Ice optics, Infrared reconnassiance.

41-4129
Fundamentals of avalanche science. [Osnovy lavinovedeniia],
Bozhinskiĭ, A.N., et al, Leningrad, Gidrometeoizdat, 1987, 280p., In Russian with abridged English table of contents enclosed. 264 refs.
Losev, K.S.
Avalanche engineering, Avalanche formation, Classifications, Snow accumulation, Snow cover structure, Snow density, Snow surveys, Mapping, Avalanche triggering, Avalanche mechanics, Avalanche wind, Avalanche forecasting, Avalanche deposits.

41-4130
Rheological properties of temperate firn.
Ambach, W., et al, *Polarforschung*, 1985, 55(2), p.71-77, With German summary. 11 refs.
Eisner, H.
Firn, Rheology, Phase transformations, Snow mechanics.

41-4131
Genesis of the push moraine at Kötlujökull, Iceland: a commentary.
Humlum, O., et al, *Polarforschung*, 1985, 55(2), p.127-137, 8 refs. For the article being commented on see 39-3374.
Heim, D.
Glacier flow, Moraines, Iceland.

41-4132
Processes of glacimarine sedimentation.
Dowdeswell, J.A., *Progress in physical geography*, Mar. 1987, 11(1), p.52-90, Refs. p.82-90.
Marine deposits, Sedimentation, Ice rafting.
Processes influencing glacimarine sedimentation are emphasized here, rather than the depositional patterns which result. Of particular importance are first, the interactions between ice masses and marine waters which lead to primary sedimentation and second the mechanisms of reworking which may disturb and redistribute sea floor sediments. Continuing improvements and innovations in field equipment allow increasingly detailed investigation of sea floor processes and iceberg calving rates and dynamics. Within the glacimarine environment there are a number of processes, their rates of operation, and the fluxes of sediment involved which are still only poorly understood. Among these are, for example, the temperature and current regimes at the base of ice shelves, the rates of melting of icebergs and the content, distribution and flux of debris through tidewater glaciers, ice shelves and icebergs. The temporal relationships between different elements of the ice-ocean system also exert a fundamental influence on glacimarine sedimentary sequences but our knowledge of these is also limited. Tidal and wind forced circulation and ice advance and retreat across polar continental shelves are also considered. (Auth. mod.)

41-4133
Snow drain system—velocity formula for snow-laden water flow.
Sato, T., et al, *Journal of hydroscience and hydraulic engineering*, Nov. 1983, 1(2), p.9-16, 4 refs.
Shuto, N.
Snowmelt, Drainage, Water flow, Turbulent flow.

41-4134
Isothermal phase change model for freezing and thawing soils 1: development.
Hromadka, T.V., II, *Environmental software*, Sep. 1986, 1(2), p.113-117, 30 refs.
Soil freezing, Ground thawing, Phase transformations, Models, Computer programs.

41-4135
Isothermal phase change model for freezing and thawing soils 2: model.
Hromadka, T.V., II, et al, *Environmental software*, Sep. 1986, 1(2), p.118-123, 3 refs.
Yen, C.C.
Soil freezing, Ground thawing, Phase transformations, Models, Computer programs.

41-4136
Ice sheets and the CO2 problem.
Van der Veen, C.J., *Surveys in geophysics*, Mar. 1987, 9(1), p.1-42, Refs. p.40-42.
Snowfall, Climatic changes, Carbon dioxide, Ice sheets.
In this review, the carbon dioxide problem is discussed, with special reference to the possible effects of a global warming on the ice sheets of Greenland and Antarctica. Instead of detailed projections of future climate and the consequences, the basic mechanisms are explained and illustrated with results described in the literature. It is concluded that a doubling of the atmospheric CO2 content (most likely to occur somewhere in the second half of the next century) will result in a globally-averaged warming of 2-4 C, and an intensification of the hydrologic cycle. In the polar regions, this warming will be a few degrees larger and as a consequence the Greenland Ice Sheet will decrease in size. Antarctica, on the other hand, is expected to grow because of the increased snowfall. The instability of the West Antarctic Ice Sheet is also discussed and, although no conclusive prediction to its long-term response can be made, it is argued that on a short time scale (less than about 100 y) nothing dramatic will happen to this part of Antarctica. (Auth.)

41-4137
Permafrost distribution in central Canada: applications of a climate-based predictive model.
Nelson, F.E., *Association of American Geographers. Annals*, Dec. 1986, 76(4), p.550-569, 54 refs.
Permafrost, Forecasting, Climatic factors.

41-4138
Breaking the ice problem. *Motor ship*, Nov. 1986, 67(796), p.48-51, 55.
Propellers, Icebreakers, Bubbling, Ice breaking.

41-4139
Use of geobotanical maps and automated mapping techniques to examine cumulative impacts in the Prudhoe Bay Oilfield, Alaska.
Walker, D.A., et al, *Environmental conservation*, 1986, 13(2), p.149-160, 11 refs.
Geobotanical interpretation, Mapping, Environmental impact, United States—Alaska—Prudhoe Bay.

41-4140
Humic substances from deposits of a natural laboratory: a blue lake on the ice-cap (Greenland).
Gadel, F., et al, *Science of the total environment*, 198, 62, p.107-109, 5 refs.
Torri, G., Bruchet, A.
Glacial lakes, Algae, Limnology, Greenland.

41-4141
Effects of freeze-thaw cycles on the microstructure of hydration products.
Pigeon, M., et al, *Durability of building materials*, 1986, vol. 4, p.1-19, 6 refs.
Regourd, M.
Freeze thaw cycles, Concretes, Mortars, Cements, Frost resistance.

41-4142
Treatment and disposal of alum and other metallic hydroxide sludges.
Reed, S.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1987, SR 87-05, 40p. + plates, ADA-180 960, 19 refs.
Smith, J.E., Sletten, R.S., Resta, J.
Sludges, Water treatment, Waste treatment, Waste disposal, Freezing, Drying, Military facilities, Mass balance.
Sludge is an inevitable product of water and wastewater treatment. The treatment and disposal of these materials is often the most costly aspect of the overall operation. The use of alum and other metallic chemicals for coagulation and other purposes has increased significantly in both water and wastewater treatment in recent years. These chemicals not only increase the total volume of sludge produced but very significantly influence its characteristics. This report describes a number of processes for sludge treatment and disposal and recommends those best suited for military facilities.

41-4143
Mechanical properties of multi-year sea ice. Phase 1: Ice structure analysis.
Richter-Menge, J.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Mar. 1987, CR 87-03, 30p., ADA-181 205, 19 refs.
Cox, G.F.N., Perron, N.M.
Ice mechanics, Ice structure, Sea ice, Pressure ridges, Ice floes, Tests.
This report describes the structural analysis of multi-year sea ice samples that were tested in the first phase of a program designed to obtain a comprehensive understanding of the mechanical properties of multi-year sea ice from the Alaskan Beaufort Sea. Each test specimen is classified into one of three major ice texture categories: granular, columnar, or a mixture of columnar and granular ice. The crystallographic orientation, percent columnar ice, and grain size are then evaluated for the granular and/or columnar ice in the sample. Test results are interpreted with respect to these parameters. The overall composition of multi-year ridges is also considered, based on the extensive field sampling that was done in the program.

41-4144
Crystal structure and salinity of sea ice in Hebron Fiord and vicinity, Labrador.
Gow, A.J., *U.S. Army Cold Regions Research and Engineering Laboratory,* Mar. 1987, CR 87-04, 18p., ADA-180 930, 15 refs.
Ice crystal structure, Ice salinity, Sea ice, Meltwater, Ocean currents, Brines, Photography, Canada—Labrador—Hebron Fiord.
Results of measurements of the crystalline structure and salinity characteristics of sea ice in Hebron Fiord and vicinity are presented. Structurally, the fiord ice was entirely first-year and composed predominantly of congelation, columnar-type crystals. At most of the sampling sites the ice exhibited moderately to strongly aligned c-axes consistent with the inferred direction of near-surface currents in the fiord. Generally diminished values of bulk salinity at five separate locations reflect the warm ice conditions encountered at the time of sampling (late May), and the effect of meltwater flushing in promoting loss of brine, vertically, from the ice sheet. Observations outside Hebron Fiord indicated the presence of only minor amounts of multi-year ice during the latter part of May.

41-4145
Man, sea, technology. [Chelovek, more, tekhnika],
Narusbaev, A.A., ed, Leningrad, Sudostroenie, 1987, 335p., In Russian. For selected papers see 41-4146 through 41-4149.
Electric power, Industrial buildings, Equipment, Petroleum industry, Drilling, Transportation, Ice navigation, Pipelines, Natural gas, Lake ice, Icebreakers, Arctic Ocean.

41-4146
Thermal energy of polar seas. [Teplovaia energiia poliarnykh morei],
Il'in, A.K., Chelovek, more, tekhnika (Man, sea, technology) edited by A.A. Narusbaev, Leningrad, Sudostroenie, 1987, p.96-112, In Russian.
Machinery, Electric power, Design, Polar regions, Air temperature, Water temperature, Arctic Ocean.

41-4147
Ships used in the exploitation of offshore deposits. [Suda dlia razrabotki morskikh mestorozhdenii],
Gorshel'nik, K., et al, Chelovek, more, tekhnika (Man, sea, technology) edited by A.A. Narusbaev, Leningrad, Sudostroenie, 1987, p.221-231, In Russian.
Moilanen, IA.
Ships, Offshore drilling, Ice navigation, Transportation, Icebreakers, Pipelines, Natural gas, Equipment, Construction materials, Design, Arctic Ocean.

41-4148
Ship for scientific expeditions to Antarctica. [Nauchno-ekspeditsionnoe sudno dlia Antarktiki],
Seppianen, E., Chelovek, more, tekhnika (Man, sea, technology) edited by A.A. Narusbaev, Leningrad, Sudostroenie, 1987, p.244-246, In Russian.
Ships, Icebreakers, Ice navigation, Marine transportation, Cranes (Hoists), Design, Unloading.
A new Soviet research vessel, under construction in Finland, is described, which will be operational by the end of 1987 and will be replacing the research vessel *Mikhail Somov.* The new ship will be equipped to navigate through open and icy waters up to -40 deg. and carry out hydrologic, biological, atmospheric, meteorological and glaciological research in the Antarctic. It is designed to transport 250 passengers, including 90 scientists and their equipment, helicopters and other aircraft, tanks and other material for research stations. The ship's measurements, which are given, allow for the installation of 4 cranes, 2 with a 50-ton capacity and 2 with a 10-ton capacity each.

41-4149
Icebreakers of the Lake Baykal ferry-boat crossing. [Ledokoly Baĭkal'skoĭ paromnoĭ perepravy],
Andrienko, V.G., Chelovek, more, tekhnika (Man, sea, technology) edited by A.A. Narusbaev, Leningrad, Sudostroenie, 1987, p.284-301, In Russian.
Lake ice, Ice cutting, Ice cover thickness, Icebreakers, Ice navigation, Ships, Design.

41-4150
Making concrete dams monolithic by cementing structural joints. [Omonolichivanie betonnykh plotin tsementatsieĭ stroitel'nykh shvov],
Argal, E.S., Moscow, Energoatomizdat, 1987, 119p., In Russian with abridged English table of contents enclosed. 36 refs.
Hydraulic structures, Concrete structures, Dams, Joints (junctions), Sealing, Cements, Winter concreting.

41-4151
Rigid surfaces for roads and airports. [Zhestkie pokrytiia aerodromov i avtomobil'nykh dorog],
Glushkov, G.I., et al, Moscow, Transport, 1987, 255p., In Russian with abridged English table of contents enclosed. 27 refs.
Thermal insulation, Concrete structures, Reinforced concretes, Permafrost beneath structures, Pavements, Airports, Roads, Freeze thaw cycles, Frost resistance, Design, Static loads, Dynamic loads, Thermal stresses.

41-4152
Rock failure under thermo-cyclic loads. [Razrushenie gornykh porod pri termotsiklicheskom vozdeĭstviĭ],
Moskalev, A.N., et al, Kiev, Naukova dumka, 1987, 248p., In Russian with abridged English table of contents enclosed. 154 refs.
Pigida, E.IU., Kerekilitsa, L.G., Vokhalin, IU.N.
Mining, Freeze thaw cycles, Permafrost, Thermal drills, Rock excavation, Fracturing.

41-4153
Reconstruction of environmental conditions of the north slope glaciers of the Terskey Ala-Tau Range from dendrologic data. [Rekonstruktsiia usloviĭ sushchestvovaniia lednikov severnogo sklona khr. Terskeĭ Ala-Too na osnove dendroindikatsionnogo analiza],
Solomina, O.N., et al, *Geograficheskoe obshchestvo SSSR. Izvestiia,* May-June 1987, 119(3), p.235-242, In Russian. 24 refs.
Pomortsev, O.A., Balaeva, V.A.
Alpine glaciation, Glacier ice, Age determination, Paleoecology, Paleoclimatology.

41-4154
Statistical modeling of pipeline interaction with the environment. [Statisticheskoe modelirovanie vzaimodeĭstviia truboprovoda s mestnost'iu],
Khrenov, N.N., *Stroitel'stvo truboprovodov,* Apr. 1987, No.4, p.40-43, In Russian.
Pipelines, Permafrost beneath structures, Petroleum industry, Statistical analysis, Models.

41-4155
Ice/frost detection using millimeter wave radiometry. Final report for period 28 May 1980-31 August 1981.
Gagliano, J.A., et al, *U.S. National Aeronautics and Space administration. Contractor report,* Aug. 31, 1981, NASA-CR-161868, 55p. N81 32176.
Newton, J.M., Davis, A.R., Foster, M.L.
Ice detection, Ice conditions, Radiometry, Remote sensing, Hoarfrost, Statistical analysis, Tests, Data processing.

41-4156
Compendium of marine meteorological and oceanographic products of the Ocean Products Center.
Feit, D.M., *U.S. National Oceanographic and Atmospheric Administration. Technical memorandum,* Sep. 1986, NOAA-TM-NWS-NMC-68, 105p. PB87-101-812/XAB.
Marine meteorology, Oceanography, Lake ice, Weather forecasting, Ocean waves, Water temperature, Mathematical models, Polar regions, Great Lakes.

41-4157
NASA's aircraft icing analysis program.
Shaw, R.J., *U.S. National Aeronautics and Space Administration. Technical memorandum,* 1986, NASA-TM-88791, 26p. N86-315 48/8/XAB.
Aircraft icing, Ice accretion, Ice prevention, Ice removal, Computer applications, Drops (liquids).

41-4158
Comparative analysis of sea ice features using side-looking airborne radar (SLAR) and Landsat imagery.
Barnes, J.C., et al, *U.S. National Aeronautics and Space Administration. Contractor report,* Mar. 1981, NASA-CR-165335, 66p., N81-33539, 14 refs.
Bowley, C.J.
Sea ice distribution, Remote sensing, Ice edge, Side looking radar, LANDSAT, Beaufort Sea, Bering Sea.

41-4159
Ice sheet altimetry.
Brooks, R.L., *U.S. National Aeronautics and Space Administration. Contractor report,* Mar. 1981, NASA-CR-156877, 30p. N81-31605.
Ice sheets, Remote sensing, Height finding, Topographic features, Ice mechanics, Ice surface, Surface properties, Slopes, Greenland.
NASA Wallops Flight Center is currently designing on improved ice sheet tracking capability to be incorporated into future satellite altimeters. The GeoScience Research Corporation (GSRC) has been assisting WFC personnel to provide ice sheet topography parameters and to evaluate the Seasat altimeter performance over the Antarctic and Greenland ice sheets.

41-4160
Some features of providing heat supply to thermal power stations being built in regions of temperate and cold climate.
Sypachev, G.G., et al, *Thermal engineering,* Aug. 1986, 33(8), p.421-422, Translated from Teploenergetika.
Stikhin, I.V., Shamarin, P.A., Loskutov, V.G.
Electric power, Heating, Heat pipes, Electric equipment, Earthwork, Soil freezing, Frost penetration.

41-4161
Start-up dynamics of an arterial heat pipe from the frozen or chilled state.
Abramenko, A.N., et al, *Journal of engineering physics,* Nov. 1986 (Pub. May 87, 51(5), p.1283-1288, Translated from Inzhenerno-fizicheskiĭ zhurnal. 12 refs.
Kanonchik, L.E., Prokhorov, IU.M.
Engines, Cold exposure, Engine starters, Heat pipes.

41-4162
Dynamics of the freezing over of underground pipes.
Krasovitskiĭ, B.A., *Journal of engineering physics,* Nov. 1986 (Pub. May 87, 51(5), p.1331-1337, Translated from Inzhenerno-fizicheskiĭ zhurnal. 11 refs.
Ice accretion, Water pipelines, Pipeline freezing, Heat transfer, Analysis (mathematics).

41-4163
Solution of the self-simulating problem of heat and moisture transfer during freezing of disperse soils.
IAnitskiĭ, P.A., *Journal of engineering physics,* Nov. 1986 (Pub. May 87, 51(5), p.1338-1344, Translated from Inzhenerno-fizicheskiĭ zhurnal. 9 refs.
Frozen fines, Soil freezing, Frost penetration, Soil water migration, Mathematical models.

41-4164
Cooling of a salt solution.
Entov, V.M., et al, *Journal of engineering physics,* Nov. 1986 (Pub. May 87, 51(5), p.1344-1347, Translated from Inzhenerno-fizicheskiĭ zhurnal. 7 refs.
Maksimov, A.M.
Stefan problem, Phase transformations, Brines, Crystal growth, Mathematical models, Cooling rate.

41-4165
Effect of dynamic action on compressibility of thawing sands.
Inozemtsev, V.K., *Soil mechanics and foundation engineering,* Nov.-Dec. 1986 (Pub. May 87), 23(6), p.235-240, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 7 refs.
Permafrost bases, Industrial buildings, Permafrost structure, Ground ice, Sands, Compressive properties, Ice melting, Dynamic loads.

41-4166
Determination of the deformation characteristics of permafrost by the method of probe thawing.
Maksimenko, E.S., et al, *Soil mechanics and foundation engineering,* Nov.-Dec. 1986 (Pub. May 87), 23(6), p.248-251, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 10 refs.
Ponomarev, F.D., Sorokin, V.A., Fedoseev, IU.G.
Permafrost bases, Ground ice, Ice melting, Settlement (structural), Tests, Artificial thawing, Physical properties, Compressive properties.

41-4167
Foolproof sinking of piles into thawed and perennially frozen grounds. [Bezdefektnoe pogruzhenie svaĭ v talykh i vechnomerzlykh gruntakh],
Novozhilov, G.F., Leningrad, Strolizdat, 1987, 111p., In Russian with abridged English table of contents enclosed. 95 refs.
Permafrost, Foundations, Piles, Ground thawing, Pile driving, Pile load tests, Pile structures, Concrete piles, Reinforced concretes, Construction equipment.

41-4168
Heat balance of the non-chernozem zone of the European RSFSR. [Teplovoĭ balans nechernozemnoĭ zony evropeĭskoĭ territorii RSFSR],
Nesmelova, E.I., et al, *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, May-June 1987, No.3, p.54-60, In Russian. 4 refs.
Moroz, E.V.
Soil temperature, Permafrost hydrology, Snow cover effect, Snow depth, Snow cover distribution, Cryogenic soils, Solar radiation, Evaporation, Tundra, Forest tundra.

41-4169
Role of gas-liquid inclusions in the mechanism of cryogenic disintegration of quartz. [Rol' gazovo-zhidkikh vkliucheniĭ v mekhanizme kriogennogo razrusheniia kvartsa],
Rogov, V.V., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, May-June 1987, No.3, p.81-85, In Russian. 10 refs.
Frost weathering, Minerals, Freeze thaw cycles, Alluvium, Crystals, Impurities, Frost shattering.

41-4170
Stages in the development of spot medallions and origin of the circular fractures on their surface. [Stadiĭnost' razvitiia piaten-medal'onov i genezis "kol't-sevykh" treshchin na ikh poverkhnosti],
Pukemo, M.N., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, May-June 1987, No.3, p.85-89, In Russian. 5 refs.
Cryogenic soils, Frost action, Patterned ground.

41-4171
Influence of pine, spruce and black alder forests on the formation of snow cover. [Vliianie sosnovykh, elovykh i chernool'khovykh nasazhdeniĭ na formirovanie snezhnogo pokrova],
Blintsov, I.K., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Lesnoĭ zhurnal*, 1987, No.2, p.15-18, In Russian. 3 refs
Kudin, M.V., Natarov, V.M.
Forest soils, Snow cover distribution, Snow accumulation, Snow water equivalent, Snow depth, Vegetation factors.

41-4172
Studying the service life of forest winter roads on the Arkhangel'sk Lumber Industry lands. [Issledovanie srokov ekspluatatsii zimnikh lesovoznykh dorog ob"edineniia Arkhangel'sklesprom],
IAkovenko, IU.G., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Lesnoĭ zhurnal*, 1987, No.2, p.40-45, In Russian.
Forest land, Transportation, Roads, Frost penetration.

41-4173
Sloped roof snow loads using simulation.
Sack, R.L., et al, *Journal of structural engineering*, Aug. 1987, 113(8), p.1820-1833, 19 refs.
Arnholtz, D.A., Haldeman, J.S.
Snow loads, Roofs, Snow physics, Snow mechanics, Models.

41-4174
Observation of sea ice using the 36-GHz surface contour radar.
Fedor, L.S., et al, *I.E.E.E. transactions on geoscience and remote sensing*, May 1987, GE-25(3), p.393-402, 10 refs.
Walsh, E.J., Cavalieri, D.J.
Sea ice distribution, Radar photography, Aerial surveys, Mapping.

41-4175
Exposure tests at Treat Island.
Smith, R.J., *Concrete international*, May 1987, 9(5), p.48-53, 3 refs.
Reinforced concretes, Concrete durability, Cracking (fracturing), Freeze thaw cycles, Tensile properties.

41-4176
Ice-sheet failure against inclined and conical surfaces.
Kaldjian, M.J., *Computers & structures*, 1987, 26(1-2), p.145-152, 10 refs.
Ice breaking, Offshore structures, Cracking (fracturing), Ice physics.

41-4177
Impact experiments in low-temperature ice.
Lange, M.A., et al, *Icarus*, Mar. 1987, 69(3), p.506-518, 34 refs.
Ahrens, T.J.
Impact tests, Penetration tests, Ice strength.

41-4178
Effect of a freeze-thaw cycle on properties of microsomal membranes from wheat.
Borochov, A., et al, *Plant physiology*, May 1987, 84(1), p.131-134, 20 refs.
Freeze thaw cycles, Plant physiology, Acclimatization, Frost resistance.

41-4179
Four-element CODAR beam forming.
Jeans, P.K., et al, *I.E.E.E. journal of oceanic engineering*, Apr. 1986, OE-11(2), p.296-303, 11 refs.
Donnelly, R.
Radar, Sea states.

41-4180
Configurational entropy of partially ordered ice.
Howe, R., et al, *Journal of chemical physics*, June 1987, 86(11), p.6443-6445, 6 refs.
Whitworth, R.W.
Ice microstructure, Molecular structure, Protons.

41-4181
Seasonal activity and scientific observations in the 27th Soviet Antarctic Expedition. [Sezonnye raboty y nauchnye issledovaniia v 27 Sovetskoĭ antarkticheskoĭ ekspeditsii],
Maksutov, D.D., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.5-9, In Russian.
Expeditions.
A general description of the scientific investigations of the 27th Soviet Antarctic Expedition for the 1981-1982 season, conducted on various ships as well as at Soviet antarctic stations, in the interior of the continent and on antarctic coasts. Research included crustal studies, gravimetry, geodesy, and some work in geomagnetism and oceanography.

41-4182
Soviet-American field experiment "Weddell-POLEX-81". [Sovetsko-amerikanskiĭ naturnyĭ eksperiment "Uedell-POLEKS-81"],
Sarukhanian, E.I., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.9-18, In Russian. 3 refs.
Sea ice, Polynyas, Research projects, Sea ice distribution, Air water interactions, Antarctica—Weddell Sea.
A Soviet-American expedition, carried out on board the Soviet ship *Mikhail Somov* during Oct.-Nov. 1981, is described. The investigations were aimed at: oceanic processes in the Weddell Sea in relation to basic mechanisms responsible for the formation of polynyas and development of the bottom water; the interaction between ocean and atmosphere in ice-free areas as well as in areas with variable density of ice; the hydrochemical conditions in relation to the ecology of biological organisms; the yearly life cycle of the southern ocean biomass; the physical and chemical properties of sea ice in relation to winter navigation in the southern ocean; and the monitoring of atmospheric circulation. A list of participants is presented.

41-4183
Southern ocean thermohaline water stratification according to ice cover data of the "Weddell-POLEX-81" expedition. [Osobennosti termokhalinnoĭ stratifikatsii vod IUzhnogo okeana pri nalichii ledianogo pokrova po dannym ekspeditsii "Uedell-POLEKS-81"],
Bagriantsev, N.V., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.18-27, In Russian. 7 refs.
Sarukhanian, E.I.
Sea ice, Polynyas, Ice cover effect, Antarctica—Weddell Sea.
Oceanic data, collected during the "Weddell-POLEX-81" expedition on board the Soviet ship *Mikhail Somov*, on water mass distribution and mixing of the Antarctic Circumpolar Current with the warm Weddell counter-current, and their interaction with the warm and strong winds blowing over the Weddell Sea, are reviewed. Since the water masses investigated were entirely covered by ice, the data obtained are considered to be particularly valuable in the study of the formation of the thermohaline structure in the compacted ice edge zone of the southern ocean.

41-4184
Review of observations carried out by american specialists during the Soviet-American expedition "Weddell-POLEX-81". [Obzor issledovaniĭ vypolnennykh amerikanskimi spetsialistami po materialam sovetsko-amerikanskoĭ ekspeditsii "Ueddell-POLEKS-81"],
Gordon, A.L., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.27-37, In Russian. 4 refs.
Sea ice, Oceanography, Research projects, Marine biology, Antarctica—Weddell Sea.
Articles published by American scientists participating in a Soviet-American expedition carried out on board the Soviet ship *Mikhail Somov* during Oct.-Nov., 1981, in the ice-covered regions of the southern ocean, are reviewed. The topics investigated include: physical oceanography, sea ice and the atmospheric layer above it, biogenic elements and primary productivity, and the distribution of plankton.

41-4185
Ice conditions in the "Weddell-POLEX-81" study area. [Ledovye usloviia v raĭone provedeniia eksperimenta "Uedell-POLEX-81"],
Chuguĭ, I.V., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.37-41, In Russian.
Ice navigation, Sea ice distribution, Pack ice.
The progress of the Soviet ship *Mikhail Somov* in the Weddell Sea during Oct.-Nov., 1981, a period in which the drift-ice belt is at its widest, is discussed. Data on ice conditions during the entire cruise are presented in a chart and described, beginning with latitude 56 deg 15'S 03 deg 38'E, on Oct. 20th, where the pack ice showed 1-3 points, increasing to 10 points at 59 deg 15'S 5 deg 10'E when the ship entered a zone of ice 100-120 cm thick. This condition extended southward for 150 miles, as confirmed by satellite data. The ship's mean speed in different packing conditions consisted of 2.6 knots, slowing down to 2.1 knots in pack ice of 8-10 points.

41-4186
Atmospheric circulation in the Atlantic sector of the southern ocean according to results of the "Weddell-POLEX-81" expedition. [Atmosfernaia tsirkuliatsiia nad atlanticheskim sektorom IUzhnogo okeana (rezul'taty eksperimenta "Uedell-POLEX-81")],
Lysakov, E.P., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.45-49, In Russian.
Pack ice, Polynyas, Atmospheric circulation.
Results of monitoring atmospheric circulation over the central portion of the Atlantic sector of the southern ocean, from Oct. 18 through Nov. 15, are presented. Basic findings, related to the intensity of zonal vs. meridional circulation, cloudiness, cyclonic systems, pack ice, and formation of polynyas, are discussed.

41-4187
Influence of atmospheric circulation on the formation of Weddell polynya. [O vliianii atmosfernoĭ tsirkuliatsii na formirovanie polyn'i Ueddella],
Lysakov, E.P., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.52-56, In Russian. 2 refs.
Sveshnikov, A.M.
Polynyas, Atmospheric circulation, Antarctica—Queen Maud Land.
A table showing the meridional pressure gradient in the 50-65 deg S zone over the Atlantic sector of the southern ocean, for the periods 1971-1973, 1974-1976 and 1977-1979, is discussed. The conclusion is derived from the above analysis, based mainly on the annual variations of wind currents in the Maud Rise region, that such currents have a definite influence on the formation of polynyas in that area.

41-4188
Meso- and macroscale air-sea interaction processes in the South Atlantic Ocean. [Mezo- i makromasshtabnoe vzaimodeĭstvie atmosfery i okeana v IUzhnoĭ Atlantike],
Vasil'ev, V.F., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.62-67, In Russian. 4 refs.
Romanov, V.F.
Ice air interface, Polynyas, Sea ice, Air water interactions, Antarctica—Weddell Sea.
A scheme of local and macroscale energy parameters, in the Weddell Sea polynyas, is presented and discussed. It includes the following: sea ice thickness; spatial distribution and density of atmospheric-boundary-layer internal energy; spatial distribution of turbulent heat flow; surface pressure, surface temperature and temperature at 850-Mbar level; spatial density distribution of potential and kinetic energy; and spatial distribution of vertical Ekman currents

41-4189
Small-scale interaction between atmosphere and ocean at Maud Rise. [Melkomasshtabnoe vzaimodeĭstvie atmosfery i okeana v raĭone podniatiia Mod],
Makshtas, A.P., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.67-71, In Russian. 6 refs.
Bogorodskiĭ, P.V., Andreas, E.L.
Sea ice, Polynyas, Heat balance, Air temperature, Ice temperature, Ice air interface, Antarctica—Weddell Sea.
Experiments to determine the heat balance between atmosphere and the southern ocean in winter, conducted jointly by Soviet and American scientists during the "Weddell-POLEX-81" expedition, are described. The balance structure is analyzed; results obtained allowed to draw, and present, detailed charts of the heat processes in the atmospheric boundary layer.

41-4190
Ice conditions during the *Mikhail Somov* cruise in a Soviet antarctic expedition. [Osobennosti ledovykh uslovii pri plavanii nes *Mikhail Somov* v period Sovetskoi antarkticheskoi ekspeditsii].
Proshutinskiĭ, A.IU., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.75-78, In Russian.
Chugui, I.V.
Ships, Icebergs, Sea ice distribution, Polynyas, Ice formation, Ice navigation.
A study of ice dynamics in the Pacific and Indian oceans along the antarctic coast on board the *Mikhail Somov* in summer 1981-1982 is discussed. The following was found: the northern edge of the ice mass in the Cosmonaut Sea had moved significantly southward in relation to its former location of many years; in Dec. 1981, the width of the fast ice belt near Molodezhnaya Station did not exceed 60 miles; by Apr. 1982 all ice had disappeared; in the Davis Sea, some ice was seen in Jan. 1982 and none in Feb.; ice beginning to form again toward the end of Mar.; near Leningradskaia Station, the navigation through the fast ice was easy at the end of Jan. and beginning of Feb.; near Russkaya Station, in the Pacific Ocean, the summer was unusually mild, with air temperatures ranging between 2 and 7C, and the sh[illegible] drifted at a speed of 0.4-0.5 knots, with an easterly wind of 1[illegible] m/s. It is concluded that in this area the ice dynamics are strongly linked to the wind regime, and that there is a greater stability in the Pacific ice mass than in the seas of East Antarctica.

41-4191
Estimate of number of icebergs in the southern ocean. [Ob otsenke kolichestva aisbergov v IUzhnom okeane].
Bagriantsev, N.V., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.85-87, In Russian. 3 refs.
Popov, I.K., Potapov, V.A.
Icebergs, Sea ice distribution.
From Dec. 1983 to Apr. 1984 the Soviet ship *Professor Vize* circumnavigated Antarctica between 60 and 70S, at 15 knots/h, conducting a study of iceberg occurrence in the area. Results, some presented in a table, indicate the presence of approximately 50 thousand icebergs, of an average height of 30 m. Average fresh ice density is found to be 920 kg/cu m.

41-4192
By radio from Antarctica. [Po radio iz Antarktiki], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1986, Vol.108, p.92-95, In Russian.
Meteorological data, Antarctica.
Presented is a month-by-month table of meteorological data—atmospheric pressure and temperature, wind speed, relative humidity and cloudiness—recorded at each of the 7 Soviet stations from Jan. through Dec., 1984.

41-4193
Basic regularities of the ice process development in the southern ocean. [Osnovnye zakonomernosti razvitiia ledovykh protsessov IUzhnogo okeana],
Romanov, A.A., *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.28-35, In Russian. 13 refs.
Ice formation, Sea ice distribution, Pack ice, Ice air interface.
In this study, reviewing regularities in ice formation and development in the southern ocean, two tables and a chart are presented and discussed. They show the following: long period averages of the occurrence of pack ice propagation in the world ocean; mean, maximum and minimum monthly extent of drift ice in the southern ocean, 1964-1980; and ice areas during maximum, middle and minimum ice cover development in the Atlantic, Pacific and Balleny regions. Also briefly considered is the interrelationship of atmospheric circulation and ice cover formation.

41-4194
Ice distribution in Arctic seas of the North American shelf. [Osobennosti raspredeleniia l'dov v arkticheskikh moriakh Severoamerikanskogo shel'fa],
Smirnov, V.I., *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.35-40, In Russian. 10 refs.
Sea ice distribution, Ice conditions, Drift, Polynyas, Continental shelves, Seasonal variations.

41-4195
Basic components of chemical balance of the Arctic Ocean. [Osnovnye sostavliaiushchie khimicheskogo balansa Severnogo Ledovitogo okeana],
Rusanov, V.P., *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.40-51, In Russian. 23 refs.
Sea water, Chemical composition, Water transport, Sea ice distribution, Ice composition, Land ice, Runoff, Ocean currents.

41-4196
Process of natural cleaning of the Arctic Basin surface (theoretical and experimental studies). [Protsessy estestvennogo ochishcheniia poverkhnosti Arkticheskogo basseĭna (teoreticheskie i eksperimental'nye issledovaniia)],
Izmaĭlov, V.V., *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.51-58, In Russian. 19 refs.
Water pollution, Oil spills, Arctic Ocean.

41-4197
Conditions of ice-flora habitat in the central part of the Arctic Ocean. [Ob usloviiakh obitaniia ledovoĭ flory v tsentral'noĭ chasti Arkticheskogo basseĭna],
Mel'nikov, I.A., *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.59-62, In Russian. 5 refs.
Sea ice, Microbiology, Algae, Ice temperature, Ice water interface, Cryobiology.

41-4198
Numerical modeling of annual cycle of ice cover evolution and seasonal forecasts of ice redistribution in the Soviet Arctic seas. [Chislennoe modelirovanie godovogo tsikla evoliutsii ledianogo pokrova i sezonnye prognozy pereraspredeleniia l'dov v moriakh Sovetskoĭ Arktiki],
Appel', I.L., et al, *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.71-77, In Russian. 3 refs.
Gudkovich, Z.M., Frolov, I.E.
Sea ice distribution, Mathematical models, Ice forecasting, Ice conditions, Long range forecasting.

41-4199
Peculiarities of ice movement in the Arctic Basin according to data of the FGGE automatic buoys. [Nekotorye osobennosti dvizheniia l'dov v Arkticheskom basseĭne po dannym avtomaticheskikh buev PGEP],
Losev, S.M., et al, *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.77-88, In Russian. 10 refs.
Gorbunov, IU.A., Kulakov, I.IU.
Sea ice distribution, Drift, Ice navigation, Ice cover structure, Pressure ridges, Polynyas, Charts, Wind factors.

41-4200
Space-time variations in ice conditions of the Barents, White and Baltic seas. [Prostranstvenno-vremennaia izmenchivost' ledovykh uslovii Barentseva, Belogo i Baltiĭskogo morei],
Sheremetevskaia, O.I., *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.88-93, In Russian. 8 refs.
Ice navigation, Ice surveys, Ice forecasting, Ice reporting.

41-4201
Amount of ice and heat required for its melting in the Far-Eastern seas of the USSR. [Kolichestvo l'da i zatraty tepla na ego taianie v dal'nevostochnykh moriakh SSSR],
IAkunin, L.P., *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.93-96, In Russian. 15 refs.
Sea ice distribution, Ice cover thickness, Ice edge, Ice melting, Ice volume, Pressure ridges.

41-4202
Study of ice movement in the Arctic Ocean by means of the FGGE automatic buoys. [Izuchenie dvizheniia l'dov v Severnom Ledovitom Okeane s pomoshch'iu avtomaticheskikh buev PGEP],
Gorbunov, IU.A., et al, *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, 96-103, In Russian. 15 refs.
Kulakov, I.IU., Losev, S.M.
Sea ice distribution, Drift, Ocean currents, Pressure ridges, Polynyas, Ice navigation, Charts.

41-4203
Ice cover effect on surface and internal free gravity waves. [O vliianii ledianogo pokrova na poverkhnostnye i vnutrennie svobodnye gravitatsionnye volny],
Savchenko, V.G., *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.103-110, In Russian. 15 refs.
Sea ice distribution, Ice cover effect, Mathematical models.

41-4204
On the causes of continuity disturbance of sea-ice cover in winter. [K voprosu o prichinakh narusheniia sploshnosti morskogo ledianogo pokrova v zimniĭ period],
Gorbunov, IU.A., et al, *Problemy Arktiki i Antarktiki; sbornik stateĭ*, 1986, Vol.62, p.110-116, In Russian. 14 refs.
Karelin, I.D., Losev, S.M.
Sea ice distribution, Ice cover structure, Polynyas, Ice deformation, Drift.

41-4205
Plane steady shear flow of a cohesionless granular material down an inclined plane. A model for flow avalanches part 2: numerical results.
Hutter, K., et al, *Acta mechanica*, Jan. 1987, 65(1-4), p.239-261, For part 1 see 41-3300. 5 refs.
Szidarovszky, F., Yakowitz, S.
Avalanche mechanics, Mathematical models.

41-4206
On radiative effects of anthropogenic aerosol components in Arctic haze and snow.
Blanchet, J.P., et al, *Tellus*, July 1987, 39B(3), p.293-317, 39 refs.
List, R.
Aerosols, Snow composition, Haze, Air pollution, Climatic changes, Atmospheric composition, Mathematical models, Solar radiation.

41-4207
Incompatibility of ice-core CO2 data with reconstructions of biotic CO2 sources.
Enting, I.G., et al, *Tellus*, July 1987, 39B(3), p.318-325, 23 refs.
Mansbridge, J.V.
Ice composition, Atmospheric composition, Carbon dioxide, Ice cores, Ecosystems, Sea water, Water chemistry, Mathematical models.

41-4208
Diagnostic ice-ocean model.
Hibler, W.D., III, et al, *Journal of physical oceanography*, July 1987, 17(7), MP 2238, p.987-1015, 36 refs.
Bryan, K.
Ocean currents, Sea ice, Ice water interface, Mathematical models.
A coupled ice-ocean model suitable for simulating ice-ocean circulation over a seasonal cycle is developed by coupling a dynamic thermodynamic sea ice model with a multilevel baroclinic ocean model. This model is used to investigate the effect of ocean circulation on seasonal sea ice simulations by carrying out a simulation of the Arctic, Greenland and Norwegian seas. The ocean model contains a linear term that damps the ocean's temperature and salinity towards climatology. The damping term was chosen to have a three-year relaxation time, equivalent to the adjustment time of the pack ice. No damping, however, was applied to the uppermost layer of the ocean model, which is in direct contact with the moving pack ice. This damping procedure allows seasonal and shorter time-scale variability to be simulated in the ocean, but does not allow the model to drift away from ocean climatology on longer time scales. For the standard experiment, an initial integration of five years was performed at one-day time steps and a 1.45 deg by .45 deg resolution in order to obtain a cycle equilibrium. For comparison, a five-year simulation with an ice-only model, and shorter one-year sensitivity simulations without surface salt fluxes and without ocean currents, were also carried out. Input fields consisted of climatological surface air temperatures and mixing ratios, together with daily geostrophic winds from 1979. Operational features of the model are described and an analysis is given in terms of the advance and retreat of the ice edge, ice melt fluxes, heat transport and atmospheric heat balance. (Auth. mod.)

41-4209
Examples of enhanced global solar radiation through multiple reflection from an ice-covered arctic sea.
Rouse, W.R., *Journal of climate and applied meteorology*, June 1987, 26(6), p.670-674, 9 refs.
Solar radiation, Snow cover effect, Ice cover effect, Reflectivity, Canada—Hudson Bay.

41-4210
Conditions for crack propagation by frost wedging.
Tharp, T.M., *Geological Society of America. Bulletin*, July 1987, 99(1), p.94-102, 53 refs.
Crack propagation, Frost shattering, Ice pressure, Adsorption.

41-4211
Thermal ice drill for profiling thick multiyear ice.
Poplin, J.P., et al, *Cold regions science and technology*, June 1987, 14(1), p.1-11, 9 refs.
Ralston, T.D., St. Lawrence, W.
Ice drills, Thermal drills, Ice cover thickness, Profiles, Design, Penetration.

41-4212
Osmotic model for soil freezing.
Horiguchi, K., *Cold regions science and technology*, June 1987, 14(1), p.13-22, 36 refs.
Soil freezing, Frost heave, Soil water migration, Ice lenses, Ground ice, Pressure, Temperature gradients, Heat balance, Models, Osmosis.

41-4213
Grain growth in a wet arctic snow cover.
Marsh, P., *Cold regions science and technology*, June 1987, 14(1), p.23-31, 24 refs.
Snow crystal growth, Wet snow, Grain size, Snow melting, Metamorphism (snow), Meltwater, Freezing, Snow cover.

41-4214
Water temperature and heat flux at the base of river ice covers.
Marsh, P., et al, *Cold regions science and technology*, June 1987, 14(1), p.33-50, 30 refs.
Prowse, T.D.
Heat flux, Ice cover effect, River ice, Water temperature, Heat transfer, Water flow, Ice deterioration, Ice breakup, Velocity, Convection.

41-4215
Thermal hole opener.
Hansen, D.P., *Cold regions science and technology*, June 1987, 14(1), p.51-56.
Ice cutting, Thermal drills, Subglacial navigation, Penetration, Equipment.

41-4216
Portable hot-water ice drill.
Tucker, W.B., et al, *Cold regions science and technology*, June 1987, 14(1), MP 2236, p.57-64, 5 refs. For another version, see 41-2676.
Govoni, J.W.
Ice drills, Thermal drills, Penetration tests, Ice cover thickness, Offshore drilling, Water temperature, Offshore structures, Equipment.
A portable hot-water drilling system has been developed for conducting detailed thickness surveys of multi-year sea ice. Primary components of the system are a propane-fired water heater and a twin-piston pump which is driven by a small gasoline engine. When assembled, the system is mounted on a sled which can be moved across relatively smooth ice surfaces by two persons. The system components easily fit inside a BEll 205 or 212 helicopter for movement to other locations. A field program in April and May 1986 proved the viability of the system for rapidly penetrating multi-year sea ice in relatively cold ambient temperatures. The prototype drill penetrated ice at rates of 3 m/min. A 43-cm-diameter ring can be quickly substituted for the normal drilling probe. This ring is useful for making larger holes through the ice for the release or recovery of instruments. Overall performance of the drilling system was highly satisfactory during the field investigations. Future systems, however, will incorporate fuel oil burners and higher-pressure pumps to achieve higher penetration rates as well as to take advantage of more readily available fuel sources.

41-4217
Splashing a ship with collision-generated spray.
Zakrzewski, W.P., *Cold regions science and technology*, June 1987, 14(1), p.65-83, 29 refs.
Ship icing, Ice loads, Sea spray, Ice growth, Wind velocity, Analysis (mathematics), Ocean waves, Unfrozen water content, Time factor.

41-4218
Structure-ridge interaction.
Gershunov, E.M., *Cold regions science and technology*, June 1987, 14(1), p.85-94, 36 refs.
Offshore structures, Pressure ridges, Ice loads, Ice solid interface, Ice strength, Shear stress.

41-4219
Structure-rubble field interaction.
Gershunov, E.M., *Cold regions science and technology*, June 1987, 14(1), p.95-103, 9 refs.
Offshore structures, Ice loads, Ice solid interface, Ice strength, Analysis (mathematics), Ice mechanics, Enginerring.

41-4220
Hydraulic engineering.
National Conference on Hydraulic Engineering, Williamsburg, VA, Aug. 3-7, 1987, New York, American Society of Civil Engineers, 1987, 1162p., Refs. passim. For selected papers see 41-4221 through 41-4223.
Ragan, R.M., ed.
Hydraulics, Hydraulic structures, Ice cover effect, River ice, River flow, Water waves, Meetings, Mathematical models, Computer applications.

41-4221
Mathematical model for river ice.
Shen, H.T., et al, National Conference on Hydraulic Engineering, Williamsburg, VA, Aug. 3-7, 1987. Proceedings, New York, American Society of Civil Engineers, 1987, p.141-146, 8 refs.
Lal, W.A.M., Gunaratna, P.
River ice, Ice conditions, Ice forecasting, Hydraulics, River flow, Mathematical models, Water temperature, Computer applications, Frazil ice, Ice mechanics, Ice cover thickness.

41-4222
River wave response to the friction-inertia balance.
Ferrick, M.G., et al, MP 2237, National Conference on Hydraulic Engineering, Williamsburg, VA, Aug. 3-7, 1987. Proceedings, New York, American Society of Civil Engineers, 1987, p.764-769, 2 refs.
Asce, M.
River flow, Water waves, Wave propagation, Friction, Unsteady flow, Ice jams, Ice breakup, Floods, Analysis (mathematics).
The changing character of the solution of the Saint-Venant equations for river flow problems with the dimensionless parameter F(I) reflects a changing balance between friction and inertia. I linearize and place these equations in nondimensional form, and obtain solutions or consider the structure of the solution in different ranges of F(I). The solutions for inertia-dominated flow and for friction-dominated flow have similar form but represent fundamentally different physical processes. In treating the transition between these extremes I identify and obtain expressions for the frictional attenuation of disturbances transmitted by dynamic waves.

41-4223
Composite resistance to flow with an ice cover.
Alger, G.R., et al, National Conference on Hydraulic Engineering, Williamsburg, VA, Aug. 3-7, 1987. Proceedings, New York, American Society of Civil Engineers, 1987, p.812-817, 3 refs.
Santeford, H.S.
River flow, Ice cover effect, Analysis (mathematics), Erosion.

41-4224
Terrace scarp deflation as a renewable source for eolian sediments in an arctic periglacial setting.
Swett, K., et al, *Polar research*, June 1987, 5(1), p.45-52, 13 refs.
Mann, K.
Glacial deposits, Periglacial processes, Wind erosion, Sediments, Greenland—Vibekes Glacier.

41-4225
Radioactive cesium from the Chernobyl accident in the Greenland ice sheet.
Davidson, C.I., et al, *Science*, Aug. 7, 1987, 237(4815), p.633-634, 21 refs.
Radioactive isotopes, Fallout, Ice sheets, Greenland.

41-4226
Comment on "Oxygen budget of a perennially ice-covered antarctic lake [and Reply].
Top, Z., *Limnology and oceanography*, Mar. 1987, 32(2), p.520-521, 5 refs. For article being discussed see 40-4358 or B-34125.
Wharton, R.A., Jr., McKay, C.P.
Limnology, Oxygen, Freezing rate.
Top questions the Wharton/McKay assumption that all of the O2 content of the meltwater joining the lake each year is retained by the lake. Wharton/McKay point out that since the lake freezing rate is too low for O2 bubbles to form, they did not expect a significant amount of the gas to be retained by the lake. They also suggest that arctic ice edge freezing rates do not apply to antarctic lakes.

41-4227
Evidence for two zones of debris entrainment beneath the Greenland ice sheet.
Sugden, D.E., et al, *Nature*, July 1987, 328(6127), p.238-241, 12 refs.
Ice sheets, Ice edge, Basal sliding, Glacial erosion, Periglacial processes.

41-4228
Ice growth in supercooled solutions of antifreeze glycoprotein.
Harrison, K., et al, *Nature*, July 1987, 328(6127), p.241-243, 12 refs.
Antifreezes, Solutions, Supercooling, Ice growth.

41-4229
Nitrification: a significant cause of oxygen depletion under winter ice.
Knowles, R., et al, *Canadian journal of fisheries and aquatic sciences*, Apr. 1987, 44(4), p.743-749, With French summary. 31 refs.
Lean, D.R.S.
Limnology, Icebound lakes, Water chemistry.

41-4230
Disk camera system for automatic recording of visual data: snow depth in field plots.
Alberga, A.H., et al, *Phytopathology*, June 1987, 77(6), p.927-929, 6 refs.
Marosy, M., Tanner, C.B., Upper, C.D.
Snow depth, Snow survey tools, Weather stations, Photography.

41-4231
Introduction: Summer marginal ice zone experiments during 1983 and 1984 in Fram Strait and the Greenland Sea.
Johannessen, O.M., *Journal of geophysical research*, June 30, 1987, 92(C7), p.6716-6718, 2 refs.
Ice water interface, Ice edge, Ice air interface, Pack ice, Sea water, Sea ice distribution, Climatic factors, Seasonal variations, Greenland Sea, Fram Strait.

41-4232
Large-scale oceanography in Fram Strait during the 1984 Marginal Ice Zone Experiment.
Quadfasel, D., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6719-6728, 25 refs.
Gascard, J.C., Koltermann, K.P.
Ice edge, Oceanography, Ocean currents, Hydrography, Water temperature, Sea water, Salinity, Fram Strait.

41-4233
Circulation and water masses of the East Greenland shelf.
Bourke, R.H., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6729-6740, 19 refs.
Newton, J.L., Paquette, R.G., Tunnicliffe, M.D.
Ocean currents, Water temperature, Sea ice distribution, Ice conditions, Heat transfer, Sea water, Salinity, Ice edge, Greenland Sea.

41-4234
Current regimes across the East Greenland Polar Front at 78 deg 40' north latitude during summer 1984.
Manley, T.O., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6741-6753, 26 refs.
Hunkins, K.L., Muench, R.D.
Ocean currents, Sea water, Water temperature, Pack ice, Hydrography, Water flow, Velocity, Density (mass/volume), Salinity, Fram Strait.

41-4235
Mesoscale eddies in the Fram Strait marginal ice zone during the 1983 and 1984 Marginal Ice Zone Experiments.
Johannessen, J.A., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6754-6772, 32 refs.
Ice edge, Ocean currents, Remote sensing, Ice water interface, Sea water, Water temperature, Density (mass/volume), Velocity, Fram Strait.

41-4236
Eddy near the Molloy Deep revisited.
Bourke, R.H., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6773-6776, 7 refs.
Ice water interface, Ocean currents, Ice edge, Water temperature, Salinity, Greenland Sea.

41-4237
Phytoplankton biomass and productivity in the marginal ice zone of the Fram Strait during summer 1984.
Smith, W.O., Jr., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6777-6786, 37 refs.
Baumann, M.E.M., Wilson, D.L., Aletsee, L.
Ice edge, Biomass, Ocean currents, Water temperature, Chlorophylls, Plankton, Seasonal variations, Distribution, Sea water, Fram Strait.

41-4238
Physical properties of summer ses ice in the Fram Strait.
Tucker, W.B., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), MP 2240, p.6787-6803, 37 refs.
Gow, A.J., Weeks, W.F.
Ice physics, Sea ice, Ice edge, Snow cover effect, Ice cover thickness, Ice salinity, Ice crystal structure, Seasonal variations, Fram Strait.
The physical properties of sea ice in the Fram Strait region of the Greenland Sea were examined during June and July 1984 in conjunction with the Marginal Ice Zone Experiment field program. Most of the ice sampled within Fram Strait during this period was multiyear. Thicknesses and other properties indicated that none of the multiyear ice was older than 4 to 5 years. Snow cover on the multiyear ice averaged 29 cm, while that on first-year ice averaged only 8 cm deep. This difference may be related to enhanced sublimation of the snow on the thinner first-year ice. The salinity profiles of first-year ice clearly show the effects of ongoing brine drainage in that profiles from cores drilled later in the experiment are substantially less saline than earlier cores. Thin section examinations of crystal structure indicate that about 75% of the ice consisted of congelation ice with typically columnar type crystal structure. The remaining 25% consisted of granular ice with only a few occurrences of snow ice. The granular ice consisted primarily of frazil, found in small amounts at the top of floes but mainly observed in multiyear ridges. The horizontally oriented crystal c axes showed various degrees of alignment, ranging from no alignment to strong alignments in which the alignment direction changed with depth, implying a change in floe orientation with respect to the ocean current at the ice-water interface during ice growth. Evidence of crystal retexturing was observed in the upper meter of nearly every multiyear core. This retexturing, consisting of grain boundary smoothing and nearly complete obliteration of the ice platelet-brine layer substructure, is attributed to summer warming.

41-4239
Variations of mesoscale and large-scale sea ice morphology in the 1984 marginal Ice Zone Experiment as observed by microwave remote sensing.
Campbell, W.J., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6805-6824, 34 refs.
Ice structure, Sea ice, Ice edge, Remote sensing, Ice conditions, Microwaves, Radiometry, Seasonal variations, Fram Strait, Greenland Sea.

41-4240
Evolution of microwave sea ice signatures during early summer and midsummer in the marginal ice zone.
Onstott, R.G., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6825-6835, 19 refs.
Sea ice distribution, Ice edge, Remote sensing, Microwaves, Ice conditions, Seasonal variations, Snow cover effect, Ice electrical properties, Snow electrical properties, Ice cover thickness.

41-4241
Use of synthetic aperture radar-derived kinematics in mapping mesoscale ocean structure within the interior marginal ice zone.
Manley, T.O., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6837-6842.
Shuchman, R.A., Burns, B.A.
Oceanography, Ice edge, Drift, Remote sensing, Sea ice, Ice mechanics, Wind, Ocean currents, Mapping, Microwaves.

41-4242
Multisensor comparison of ice concentration estimates in the marginal ice zone.
Burns, B.A., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6843-6856, 22 refs.
Ice conditions, Ice edge, Remote sensing, Sea ice distribution, Microwaves, Photography, Aerial surveys, Fram Strait.

41-4243
Modeled acoustic propagation through an ice edge eddy in the East Greenland Sea marginal ice zone.
Mellberg, L.E., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6857-6868, 16 refs.
Ocean currents, Underwater acoustics, Ice edge, Oceanography, Refraction, Acoustics, Sound transmission, Wave propagation, Models, Turbulent flow, Greenland Sea.

41-4244
Results from the 1984 Marginal Ice Zone Experiment preliminary tomography transmissions: implications for marginal ice zone, arctic, and surface wave tomography.
Lynch, J.F., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6869-6885, 23 refs.
Acoustic measurement, Ice edge, Underwater acoustics, Ice pack, Sound transmission, Ice mechanics, Wave propagation, Analysis (mathematics).

41-4245
Tomographic resolution of mesoscale eddies in the marginal ice zone: a preliminary study.
Chiu, C.-S., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6886-6902, 23 refs.
Lynch, J.F., Johannessen, O.M.
Ocean currents, Ice edge, Underwater acoustics, Sound transmission, Refraction, Turbulent flow, Velocity, Wave propagation.

41-4246
Fine structure, internal waves, and intrusions in the marginal ice zone of the Greenland Sea.
Foster, T.D., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6903-6910, 10 refs.
Eckert, E.G.
Ice edge, Ocean waves, Water temperature, Salinity, Oceanography, Sea water, Temperature effects, Greenland Sea.

41-4247
High-frequency internal wave observations in the marginal ice zone.
Sandven, S., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6911-6920, 19 refs.
Johannessen, O.M.
Ocean waves, Ice edge, Remote sensing, Temperature distribution, Thermistors, Drift, Velocity.

41-4248
Mesoscale variations in surface stress, heat fluxes, and drag coefficient in the marginal ice zone during the 1983 Marginal Ice Zone Experiment.
Fairall, C.W., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6921-6932, 24 refs.
Markson, R.
Ice mechanics, Ice edge, Ice air interface, Turbulent flow, Heat flux, Solar radiation, Latent heat, Marine meteorology, Analysis (mathematics).

41-4249
Wind stress measurements over rough ice during the 1984 Marginal Ice Zone Experiment.
Anderson, R.J., *Journal of geophysical research*, June 30, 1987, 92(C7), p.6933-6941, 17 refs.
Ice surface, Wind pressure, Stresses, Ice edge, Surface roughness, Ice conditions, Ice water interface, Pack ice, Marine meteorology, Greenland Sea.

41-4250
Effect of observed ice conditions on the drag coefficient in the summer East Greenland Sea marginal ice zone.
Guest, P.S., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6943-6954, 20 refs.
Davidson, K.L.
Ice mechanics, Ice edge, Ice surface, Ice conditions, Surface roughness, Wind pressure, Stresses, Ocean currents, Marine meteorology, Greenland Sea.

41-4251
Observation of the planetary boundary layer in the marginal ice zone.
Kellner, G., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6955-6965, 23 refs.
Wamser, C., Brown, R.A.
Air flow, Ice edge, Ice cover effect, Remote sensing, Spectra, Turbulent flow, Heat flux, Wind velocity, Boundary layer, Fram Strait.

41-4252
Instability theory of ice-air interaction for the formation of ice edge bands.
Chu, P.C., *Journal of geophysical research*, June 30, 1987, 92(C7), p.6966-6970, 10 refs.
Ice air interface, Ice edge, Air flow, Boundary layer, Ice mechanics, Wind direction, Drift, Temperature variations, Analysis (mathematics).

41-4253
Aerosol size distributions in the marginal ice zone during the 1983 Marginal Ice Zone Experiment.
Borrmann, S.H., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6971-6976, 13 refs.
Davidson, K.L., Miller, M.E.
Aerosols, Ice edge, Measuring instruments, Lasers, Particle size distribution, Wind velocity, Snowfall, Greenland Sea.

41-4254
Time-dependent model for turbulent transfer in a stratified oceanic boundary layer.
McPhee, M.G., *Journal of geophysical research*, June 30, 1987, 92(C7), p.6977-6986.
Drift, Turbulent flow, Boundary layer, Ocean currents, Sea ice, Mathematical models, Freeze thaw cycles, Ice edge, Greenland Sea.

41-4255
Boundary layer, upper ocean, and ice observations in the Greenland Sea marginal ice zone.
Morison, J.H., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.6987-7011, 52 refs.
McPhee, M.G., Maykut, G.A.
Sea ice distribution, Ice edge, Ice conditions, Oceanography, Solar radiation, Ice physics, Turbulent flow, Sea water, Ice water interface, Boundary layer, Drift, Greenland Sea.

41-4256
Bottom ablation and heat transfer coefficients from the 1983 marginal ice zone experiments.
Josberger, E.G., *Journal of geophysical research*, June 30, 1987, 92(C7), p.7012-7016, 16 refs.
Ice edge, Ablation, Heat transfer, Sea water, Ice water interface, Ice melting, Ice conditions, Seasonal variations.

41-4257
Dynamics and thermodynamics of the ice/upper ocean system in the marginal ice zone of the Greenland Sea.
McPhee, M.G., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7017-7031, 36 refs.
Maykut, G.A., Morison, J.H.
Ice edge, Ice mechanics, Thermodynamics, Oceanography, Drift, Ice water interface, Ablation, Ice conditions, Wind pressure, Boundary layer, Velocity, Greenland Sea.

41-4258
Role of shortwave radiation in the summer decay of a sea ice cover.
Maykut, G.A., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7032-7044, 26 refs.
Perovich, D.K.
Ice deterioration, Sea ice distribution, Heat balance, Solar radiation, Sea water, Heat transfer, Ice melting, Wind, Ocean currents, Analysis (mathematics).

41-4259
Photogrammetric observations of the lateral melt of sea ice floes.
Hall, R.T., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7045-7048, 8 refs.
Rothrock, D.A.
Ice floes, Ice melting, Photogrammetric surveys, Sea ice distribution, Ice conditions, Heat balance, Mass balance, Greenland Sea.

41-4260
Size of wind-driven coastal polynyas.
Pease, C.H., *Journal of geophysical research*, June 30, 1987, 92(C7), p.7049-7059, 21 refs.
Polynyas, Ice mechanics, Sea ice distribution, Meteorological factors, Frazil ice, Remote sensing, Drift, Wind velocity, Mathematical models, Ice formation.

41-4261
Mesoscale sea ice deformation in the East Greenland marginal ice zone.
Leppäranta, M., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), MP 2241, p.7060-7070, 23 refs.
Hibler, W.D., III.
Ice mechanics, Drift, Ice floes, Ice conditions, Microwaves, Ocean currents, Ice edge, Analysis (mathematics).
In this paper, mesoscale (10 km) ice kinematics data obtained during the drift phase of the 1983 Marginal Ice Zone Experiment are analyzed. The measurements were made with a microwave transponder system accurate to better than 1 m. From the point of view of granular media theory, the ice pack was close to ideal. Over the scale of the array the pack was quite regular, with floes of relatively uniform size closely packed together. The main external driving force for the ice was the ocean current. Simultaneous current measurements were made at three of the strain array sites. The ice behaved in a relatively rigid manner, with more shear than dilatation occurring. Least squares fits of the strain rate tensor showed the deformation field to be quite homogeneous. Superimposed on the rigid motion were smaller fluctuations with a spectrum falling off proportional to frequency to the power of -3/2 to -2. Close examination of individual strain lines showed rather discontinuous distance changes more representative of plastic slip rather than floe bumping. Although a substantial signal at the inertial period was present in the absolute drift, no clear peaks at this period occurred in the spectra of the strain rate tensor invariants. Analysis of the spatial variation of the underlying ocean currents revealed quite a different picture from that of the ice kinematics. In particular, the current field exhibited a much greater spatial variability than the ice motion, with considerable variance at the inertial period. Coherence between the ice and ocean differential velocity was small for all frequencies. Overall, the rigid interactive character of the compact ice cover prevented most of the differential ocean currents from being transferred to the differential ice motion.

41-4262
High-frequency ice floe collisions in the Greenland Sea during the 1984 Marginal Ice Zone Experiment.
Martin, S., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7071-7084, 6 refs.
Becker, P.
Ice floes, Ocean waves, Ice edge, Ice mechanics, Interfaces, Velocity, Time factor, Greenland Sea.

41-4263
Role of floe collisions in sea ice rheology.
Shen, H.H., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), MP 2242, p.7085-7096, 21 refs.
Hibler, W.D., III, Leppäranta, M.
Ice mechanics, Ice floes, Ice edge, Ice deformation, Stresses, Rheology, Mathematical models, Pack ice.
A collisional rheology for an idealized two-dimensional flow of a fragmented ice field is derived. This fragmented ice field is modeled as an assembly of identical smooth disks. Collisions between neighboring disks are caused by the mean deformation field. These collisions transfer momentum which produces the internal stresses in the deforming ice field. By equating the collisional energy losses to the deformational energy, a relationship between the stress and strain rate is quantified. To demonstrate the essential idea, an analytical derivation is first given under quite restricted assumptions. A Monte Carlo simulation is then developed to provide a more general approach for the analysis. It is found that the collisional stresses are proportional to the square of disk diameter and the square of the deformation rate. The magnitude of stresses is also found to increase rapidly as the collisional restitution of disks increases. The collisional rheology yields zero tensile strength. The associated normal flow rule commonly used in the plastic rheology is not valid in the collisional rheology. It is found that the collisional stresses are very small. Consequently, the resulting stress divergence is estimated to be much lower than the air stress typically encountered in the marginal ice zone. However, these collisional stresses become singular as the maximum compactness is reached, indicating that a different mechanism may exist in that extreme.

41-4264
Northward flow in the Bering and Chukchi seas.
Overland, J.E., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7097-7105, 35 refs.
Roach, A.T.
Ocean currents, Water transport, Ice mechanics, Mathematical models, Wind pressure, Sea level, Seasonal variations, Bering Strait, Bering Sea, Chukchi Sea.

41-4265
Sea ice drift near Bering Strait during 1982.
Pease, C.H., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7107-7126, 30 refs.
Salo, S.A.
Drift, Sea ice, Ocean currents, Stresses, Wind direction, Drift stations, Seasonal variations, Sea level, Bering Strait.

41-4266
Satellite color observations of spring blooming in Bering Sea shelf waters during the ice edge retreat in 1980.
Maynard, N.G., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7127-7139, Refs. p.7137-7139.
Clark, D.K.
Biomass, Ice edge, Ice mechanics, Remote sensing, Ice conditions, Seasonal variations, Bering Sea.

41-4267
On the relationship between atmospheric circulation and the fluctuations in the sea ice extents of the Bering and Okhotsk seas.
Cavalieri, D.J., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7141-7162, 23 refs.
Parkinson, C.L.
Sea ice distribution, Atmospheric circulation, Ice mechanics, Ice air interface, Ice conditions, Ice edge, Seasonal variations, Microwaves, Climatic factors, Sea level, Bering Sea, Okhotsk Sea.

41-4268
Beaufort-Chukchi ice margin data from Seasat: ice motion.
Carsey, F., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7163-7172, 20 refs.
Holt, B.
Ice edge, Ice mechanics, Remote sensing, Ice deformation, Sea ice, Seasonal variations, Beaufort Sea, Chukchi Sea.

41-4269
Shuttle Imaging Radar B (SIR-B) Weddell Sea ice observations: a comparison of SIR-B and scanning multichannel microwave radiometer ice concentrations.
Martin, S., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7173-7179, 14 refs.
Holt, B., Cavalieri, D.J., Squire, V.
Sea ice distribution, Ice edge, Remote sensing, Ice conditions, Ocean waves, Radar echoes, Microwaves, Radiometry, Wind factors, Antarctica—Weddell Sea.
The October 1984 Shuttle Imaging Radar B (SIR-B) flight made three radar passes over the Weddell Sea ice, providing the first high-resolution look at the Weddell marginal ice zone properties. Using these data, this paper discusses the effect of ocean waves on the radar return at the ice edge and compares ice concentrations derived from the SIR-B with coincident concentrations from the Nimbus 7 scanning multichannel microwave radiometer (SMMR). The comparison of the SIR and SMMR concentrations is possible because SIR cross-track width and the diameter of the SMMR 37-GHz integrated field-of-view are both about 30 km. The SIR ice concentrations are computed in two ways: first, using a training area classification scheme at the Jet Propulsion Laboratory (JPL); second, using a manual classification method at the Scott Polar Research Institute. The SMMR ice concentrations are calculated using the Goddard Space Flight Center algorithm. At the ice edge, where there were no coincident SMMR data and where ice bands predominated to yield an ice concentration of the order of 10% or less, comparison of the two different analysis techniques on the same images showed that, for the JPL technique to avoid classifying some of the open water as ice, two classes of open water must be defined. These two classes accounted for the rougher ocean surface upwind of the bands and the smoother downwind surface. In the ice interior, comparison of the coincident SIR and SMMR ice concentrations shows that for concentrations greater than 40%, which was the smallest concentration jointly observed, the mean difference between the two data sets for 12 points is 2% and the standard deviation is 7%. (Auth.)

41-4270
Spring distributions of density, nutrients, and phytoplankton biomass in the ice edge zone of the Weddell-Scotia Sea.
Nelson, D.M., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7181-7190, 28 refs.
Smith, W.O., Jr., Gordon, L.I., Huber, B.A.
Ice edge, Biomass, Hydrography, Sea water, Plankton, Seasonal variations, Water temperature, Salinity, Scotia Sea, Antarctica—Weddell Sea.
Data was collected on temperature, salinity, nutrient concentrations (nitrate, nitrite, phosphate, and silicic acid), and phytoplankton biomass (chlorophyll *a*, particulate carbon, nitrogen, and biogenic silica) in the upper 150 m in the marginal ice zone of the eastern Scotia Sea and northwestern Weddell Sea during Nov. and early Dec. of 1983. A distinct hydrographic front separating Drake Passage water from Weddell and Scotia sea surface waters was located at approximately 59 S and was the site of a consistent maximum in phytoplankton biomass. In addition, there was a pronounced phytoplankton biomass maximum associated with a surface salinity minimum near the northern limit of pack ice in the waters of the Weddell-Scotia confluence that characterized the western portion of the study area. In the eastern half of the study area, characterized by largely unmodified Weddell Sea surface water, the phytoplankton biomass near the ice edge was 2-5 times lower than that in the Weddell-Scotia confluence but was increasing with time. The water column structure, nutrient fields, and phytoplankton biomass distributon all suggest that the high phytoplankton biomass in the ice edge zone of the Weddell-Scotia confluence and the lower but temporally increasing biomass near the ice edge in unmodified Weddell Sea water reflect ice edge phytoplankton blooms in different stages of their seasonal development. A bloom had become well established in the waters of the Weddell-Scotia confluence by mid-Nov., but the ice-free, vertically stable near-surface water column necessary for enhanced phytoplankton growth had apparently not been present long enough for high biomass levels to develop within the Weddell Sea proper. (Auth.)

41-4271
Evolution of dissolved oxygen in the Arctic mixed layer.
Top, Z., *Journal of geophysical research*, June 30, 1987, 92(C7), p.7191-7194, 18 refs.
Water chemistry, Ice cover effect, Oxygen, Sea water, Saturation, Water temperature, Salinity.

41-4272
Formation processes of brine drainage channels in sea ice.
Wakatsuchi, M., et al, *Journal of geophysical research*, June 30, 1987, 92(C7), p.7195-7197, 9 refs.
Kawamura, T.
Brines, Sea ice, Channels (waterways), Ice crystal structure, Drainage, Desalting, Ice growth.

41-4273
Subzero engineering.
Hills, A., *IEEE spectrum*, Dec. 1986, 23(12), p.52-56.
Cold weather operation, Telecommunication, Engineering, Equipment, Permafrost, Underground cables.

41-4274
Winter Ice Experiment Beaufort Sea (WIEBS)—data collection.
Neralla, V.R., et al, *Marine geodesy*, 1987, 11(2-3), p.203-212, 4 refs.
Venkatesh, S.
Sea ice, Ice mechanics, Ice models.

41-4275
Constitutive law for sea ice and some applications.
Häkkinen, S., *Mathematical modelling*, 1987, 9(2), p.81-90, 24 refs.
Sea ice, Ice physics, Ice mechanics, Viscosity, Stresses, Ice models.

41-4276
Ice calving, carbon dioxide and control of ice ages.
Lockwood, J.G., *Progress in physical geography*, 1985, 9(1), p.89-96, 26 refs.
Ice models, Ice sheets, Carbon dioxide, Paleoclimatology.
The literature on ice calving, carbon dioxide, and the control of ice ages published during the past decade is reviewed. Various ice sheet models for the last 100 yr are grouped into 3 types, and the results of their use in studying past climates are reviewed. The variation in atmospheric carbon dioxide content during the last glacial-to-interglacial climatic transition is revealed by Greenland and antarctic ice cores and deep sea cores. The atmosphere-ocean carbon dioxide cycle and the effect of CO2 on climate and ice sheet melting are reviewed. It is concluded that variations in atmospheric CO2 may provide an additional, or alternative, mechanism to Pollard's ice sheet calving mechanism for causing the rapid retreat of continental ice sheets.

41-4277
Cold regions roof design.
Tobiasson, W., *Military engineer*, Aug. 1987, No.516, MP 2243, p.457-458.
Roofs, Waterproofing, Icing, Snow slides, Design, Moisture, Cold weather construction, Watersheds, Construction materials, Drainage, Polar regions.

41-4278
Buoyancy flux-driven cyclonic gyre in the Labrador Sea.
Seung, Y.-H., *Journal of physical oceanography*, Jan. 1987, 17(1), p.134-146, 32 refs. For a workshop version of this paper see 41-147.
Ocean currents, Salinity, Density (mass/volume), Ice edge, Ice cover effect, Labrador Sea.

41-4279
Greenland ice 10Be concentrations and average precipitation rates north of 40 deg N to 45 deg N.
Monaghan, M.C., *Earth and planetary science letters*, July 1987, 84(2/3), p.197-203, Numerous refs.
Ice cores, Drill core analysis, Radioactive isotopes, Fallout, Greenland.

41-4280
Diatom biostratigraphy and paleoecology with a Cenozoic history of antarctic ice sheet.
Harwood, D.M., Columbus, Ohio State University, 1986, 592p., University Microfilms order No. 86-25224, Ph.D. thesis. Refs. p.559-592.
Glacial geology, Algae, Paleoecology, Paleobotany, Ice sheets, Ice volume, Paleoclimatology, Ice cover, Glaciation.
Antarctic ice-minima conditions are indicated by marine diatoms and other microfossils recovered from Sirius Formation localities spread over 1300 km in the Transantarctic Mountains. Geologic time intervals not represented by microfossils in the Sirius Formation may indicate times of extensive ice development. The glacial history these microfossils suggest is substantiated by comparison to global sea-level and benthic foraminiferal oxygen isotope data. A detailed analysis of isotopic and eustatic records, together with Sirius Formation data, indicate ice-minima conditions and relative warmth, with marine seaways across Antarctica, during the Pliocene, middle Miocene, Late Oligocene/Early Miocene and Early Oligocene and remaining Paleogene. Glaciations are indicated during the Late Oligocene, Late Miocene and Pleistocene. Bottom-water/ice-shelf events, recognized in a detailed comparison of eustatic and benthic oxygen isotopic data, precede Late Oligocene and Late Miocene ice-sheet growth by 5 million years. Analysis of diatom biostratigraphy and paleoecology from numerous *in situ* Oligocene through Pliocene sedimentary outcrops and drill-holes around the antarctic periphery have aided dating of the above reworked microfossils and have documented glacial and marine fluctuations in more uniform environments. (Auth. mod.)

41-4281
Chemical fractionation of brine in the McMurdo Ice Shelf, Antarctica.
Cragin, J.H., et al, *Journal of glaciology*, 1986, 32(112), MP 2239, p.307-313, With French and German summaries., 21 refs. For different source see 38-688 or 13F-28806.
Gow, A.J., Kovacs, A.
Ice cores, Ice salinity, Ice composition, Ice shelves, Ice physics, Antarctica—McMurdo Sound.
During the austral summers of 1976-77 and 1978-79, several ice cores were taken from the McMurdo Ice Shelf brine zone to investigate its thermal, physical, and chemical properties. Chemical analyses of brine samples from the youngest (uppermost) brine wave show that, except for the advancing front, it contains sea salts in normal sea-water proportions. Further inland, deeper and older brine layers, though highly saline (S>200 per mill), are severely depleted in (SO4)2-/Na+ ratio being an order of magnitude less than that of normal sea-water. Consideration of the solubility of alternative salts, together with analyses of Na+, K+, Ca2+, Mg2+, (SO4)2-, and Cl- concentrations, shows that the sulfate depletion is probably due to selective precipitation of mirabilite, Na2SO4.10H2O. The location of the inland boundary of brine penetration is closely related to the depth at which the brine encounters the firn/ice transition. However, a small but measurable migration of brine is still occurring in otherwise impermeable ice; this is attributed to eutectic dissolution of the ice by concentrated brine as it moves into deeper and warmer parts of the McMurdo Ice Shelf. (Auth.)

41-4282
Explosive growth of shear-heating instabilities in the down-slope creep of ice sheets.
Yuen, D.A., et al, *Journal of glaciology*, 1986, 32(112), p.314-320, 11 refs., With French and German summaries.
Saari, M.R., Schubert, G.
Ice creep, Ice sheets, Shear properties, Stability, Ice melting, Rheology, Slope orientation, Ice cover thickness, Analysis (mathematics), Temperature effects, Heating.

41-4283
Comparison of experimental and computer modeling of snow-block impact on structures.
Mead, L.B., et al, *Journal of glaciology*, 1986, 32(112), p.321-324, 5 refs., With French and German summaries.
Nakamura, H., Lang, T.E., Dent, J.D.
Snow loads, Structures, Roofs, Impact strength, Viscosity, Experimentation, Computer applications, Models.

41-4284
Wave ogives.
Waddington, E.D., *Journal of glaciology*, 1986, 32(112), p.325-334, 43 refs., With French and German summaries.
Icefalls, Ice mechanics, Ice deformation, Ice surface, Glacier flow, Mass balance, Channels (waterways), Velocity, Surface properties, Analysis (mathematics).

41-4285
Stress-gradient coupling in glacier flow: III. exact longitudinal equilibrium equation.
Kamb, B., *Journal of glaciology*, 1986, 32(112), p.335-341, 12 refs., With French and German summaries.
Glacier flow, Shear stress, Glacier surfaces, Slope orientation, Basal sliding, Glacier beds, Topographic features, Analysis (mathematics).

41-4286
Stress-gradient coupling in glacier flow: IV. Effects of the "T" term.
Kamb, B., et al, *Journal of glaciology*, 1986, 32(112), p.342-349, 13 refs., With French and German summaries.
Echelmeyer, K.A.
Glacier flow, Stresses, Basal sliding, Shear stress, Glacier surfaces, Analysis (mathematics), Glacier thickness, Slope orientation, Ice cover thickness.

41-4287
Medial moraines and surface melt on glaciers of the Torngat Mountains, northern Labrador, Canada.
Rogerson, R.J., et al, *Journal of glaciology*, 1986, 32(112), p.350-354, 8 refs., With French and German summaries.
Olson, M.E., Branson, D.
Glacier melting, Moraines, Glacial deposits, Firn, Glacier tongues, Glacier mass balance, Canada—Labrador—Torngat Mountains.

41-4288
Effects of the 1966-68 eruptions of Mount Redoubt on the flow of Drift Glacier, Alaska, U.S.A.
Sturm, M., et al, *Journal of glaciology*, 1986, 32(112), p.355-362, 18 refs., With French and German summaries.
Benson, C., MacKeith, P.
Glacier flow, Volcanoes, Glacial rivers, Glacier ablation, Avalanche formation, Velocity, Photography, Aerial surveys, United States—Alaska—Drift Glacier.

41-4289
Isotropic points on glaciers.
Nye, J.F., *Journal of glaciology*, 1986, 32(112), p.363-365, 3 refs., With French and German summaries.
Glacier surfaces, Strains, Glacier flow, Velocity, United States—Alaska—Columbia Glacier.

41-4290
Implications of the form of the flow law for vertical velocity and age-depth profiles in polar ice.
Wolff, E.W., et al, *Journal of glaciology*, 1986, 32(112), p.366-370, 18 refs., With French and German summaries.
Doake, C.S.M.
Glacier flow, Ice mechanics, Ice sheets, Ice dating, Boreholes, Velocity, Profiles.

41-4291
Changes in the salinity and porosity of sea-ice samples during shipping and storage.
Cox, G.F.N., et al, *Journal of glaciology*, 1986, 32(112), MP 2244, p.371-375, 7 refs., With French and German summaries.
Weeks, W.F.
Ice salinity, Porosity, Sea ice, Transportation, Storage.
A theoretical examination of salinity and porosity changes introduced in sea-ice samples by brine expulsion and gas entrapment caused by thermal cycling during shipping and storage shows that in extreme cases such effects can be significant, resulting in 15% reductions in porosity (n). More representative scenarios give porosity changes of less than 2% which, assuming that ice-property variations scale with n(1/2), result in property variations of less than 1%.

41-4292
Preliminary assessment of glacial ice profiling using VLF surface-impedance measurements.
Thiel, D.V., *Journal of glaciology*, 1986, 32(112), p.376-382, 18 refs., With French and German summaries.
Glacier thickness, Very low frequencies, Glacier ice, Glacier beds, Profiles, Crevasses, Mapping, Models.

41-4293
Ice conditions of an arctic polynya: North Water in winter.
Steffen, K., *Journal of glaciology*, 1986, 32(112), p.383-390, 37 refs., With French and German summaries.
Ice conditions, Polynyas, Sea ice distribution, Radiometry, Seasonal variations, Heat flux, Ice cover thickness.

41-4294
Three-dimensional coordination number from two-dimensional measurements: a new method.
Alley, R.B., *Journal of glaciology*, 1986, 32(112), p.391-396, 10 refs., With French and German summaries.
Firn, Ice structure, Ice density, Grain size, Mathematical models, Antarctica—Siple Coast.
The average three-dimensional coordination number, *n3*, is an important measure of firn structure. The value of *n3* can be estimated from *n2*, the average measured two-dimensional coordination number, and from a function that depends only on the ratio of average bond radius to grain radius in the sample. This method is easy to apply and does not require the use of unknown shape factors or tunable parameters. Values of *n3* versus density for "Upstream B" on the Siple Coast are plotted and shown. (Auth. mod.)

41-4295
Experiments on freeze-bonding between ice blocks in floating ice rubble.
Ettema, R., et al, *Journal of glaciology*, 1986, 32(112), p.397-403, 19 refs., With French and German summaries.
Schaefer, J.A.
Ice floes, Freezing, Floating ice, Shear strength, Pressure, Time factor, Salinity, Experimentation, Sea water, Air temperature.

41-4296
Motion of sub-freezing ice past particles, with applications to wire regelation and frozen soils.
Walder, J.S., *Journal of glaciology*, 1986, 32(112), p.41-4296, 33 refs., With French and German summaries.
Ice mechanics, Water films, Particles, Ice creep, Glacier flow, Frozen ground, Analysis (mathematics), Temperature effects, Temperature gradients, Rheology, Porous materials.

41-4297
Grain growth in polar ice: Pts. 1 and 2.
Alley, R.B., et al, *Journal of glaciology*, 1986, 32(112), p.415-433, 84 refs., With French and German summaries.
Perepezko, J.H., Bentley, C.R.
Grain size, Ice crystal growth, Bubbles, Ice cores, Impurities, Ice composition, Polar regions, Ice structure, Antarctica—Dome C, Antarctica—Byrd Station.
In the first part of this article, the theory is developed of grain growth in ice that is not deforming rapidly—as in central Greenland or Antarctica—and in the second part, this theory is used to explain observations from glacial ice. These observations are summarized as follows: the high concentration of soluble impurities in Wisconsinan ice from the Dome C ice core causes the small grain-sizes observed in that ice. Microparticles have little effect on grain growth in ordinary ice. In ice layers that appear dirty owing to concentrations of volcanic tephra (such as in the Byrd Station ice core) or of morainal material, microparticles reduce grain-growth rates significantly. The relatively high vapor pressure of ice allows rapid growth and high mobility of intergranular necks, so grain growth in firn is limited by boundary migration rather than by neck growth. Bubbles formed by pore close-off at the firn-ice transition are less mobile than grain boundaries, causing bubble-boundary separation whenever geometric constraints are satisfied; however, such separation reduces grain-growth rates by only about 10%. The observed linear increase of grain area with time is thus predicted by theory, but the growth rate depends on soluble-impurity concentrations as well as on temperature. (Auth. mod.)

41-4298
Granular structure of snow: an internal-state variable approach.
Hansen, A.C., et al, *Journal of glaciology*, 1986, 32(112), p.434-438, 8 refs., With French and German summaries.
Brown, R.L.
Snow cover structure, Snow deformation, Grain size, Models, Analysis (mathematics), Statistical analysis, Distribution.

41-4299
Hydraulics of subglacial cavities.
Walder, J.S., *Journal of glaciology*, 1986, 32(112), p.439-445, 29 refs., With French and German summaries.
Glacial hydrology, Subglacial caves, Glacier beds, Hydraulics, Analysis (mathematics), Glacier melting, Flow rate, Water pressure, Subglacial drainage, Meltwater.

41-4300
Mass-balance measurements: problems and two new methods of determining variations.
Reynaud, L., et al, *Journal of glaciology*, 1986, 32(112), p.446-454, 18 refs., With French and German summaries.
Vallon, M., Letreguilly, A.
Glacier mass balance, Glacier oscillation, Glaciology, Statistical analysis, Analysis (mathematics).

41-4301
Basal water and high-pressure basal ice.
Weertman, J., *Journal of glaciology*, 1986, 32(112), p.455-463, 21 refs., With French and German summaries.
Subglacial drainage, Water pressure, Water flow, Glacier flow, Analysis (mathematics), Ice pressure, Glacier beds, Water films, Channels (waterways), Meltwater.

41-4302
Recent advance of the Ross Ice Shelf, Antarctica.
Jacobs, S.S., et al, *Journal of glaciology*, 1986, 32(112), p.464-474, Refs. p.472-473., With French and German summaries.
MacAyeal, D.R., Ardai, J.L., Jr.
Calving, Ice volume, Ice shelves, Rheology, Ice melting, Icebergs, Flow rate, Antarctica—Ross Ice Shelf.
The seaward edge of the Ross Ice Shelf advanced northward at a minimum average velocity of 0.8 km/a between 1962 and 1985. That advance approximated velocities that have been obtained from glaciological data, indicating little recent wastage by iceberg calving. West of long. 178°E, the ice shelf has attained its most northerly position in the past 145 years, and has not experienced a major calving episode for at least 75 years. Calving may occur at more frequent intervals in that sector, which also overlies the warmest ocean currents that flow into the sub-ice-shelf cavity. Available information on ice-shelf advance, thickness, spreading rate, and surface accumulation indicates a basal melting rate around 3 m/a near the ice front. These data and independent estimates imply that basal melting is nearly as large a factor as iceberg calving in maintaining the ice-shelf mass balance. In recent years, the Ross, Ronne, and Filchner Ice Shelves have contributed few icebergs to the southern ocean, while projections from a contemporaneous iceberg census are that circumpolar calving alone may exceed accumulation on the ice sheet. (Auth. mod.)

41-4303
Isotopic fractionation at the base of polar and subpolar glaciers.
Boulton, G.S., et al, *Journal of glaciology*, 1986, 32(112), p.475-485, 21 refs., With French and German summaries.
Spring, U.
Isotope analysis, Glacier mass balance, Ice composition, Regelation, Basal sliding, Impurities, Antarctica—Byrd Station.
The melting of ice and the subsequent production of regelation ice from the melt water in a large-scale closed system beneath sub-polar and polar glaciers produces progressive fractionation between the melt water and the regelation ice derived from it. A theory is developed which predicts the change of isotopic composition in regelation ice in a subglacial zone of freezing and in the water from which it is derived. The theory is tested against data from the Byrd Station bore hole in West Antarctica, and applied to explain features of the isotopic composition in several other glaciers where thick sequences of regelation ice have formed. The principal conclusions are drawn. (Auth. mod.)

41-4304
Accumulation distribution in Terre Adélie, Antarctica: effect of meteorological parameters.
Pettre, P., *Journal of glaciology*, 1986, 32(112), p.486-500, 23 refs., With French and German summaries.
Snow accumulation, Snow air interface, Antarctica—Adélie Coast.
Along the 1040 km extending from Cape Prud'homme, near Dumont d'Urville Station, to Dome C, the variations in annual accumulation can be analyzed by a division of the entire data set into three sub-sets depending on the types of measurements and the character of the spatial distribution. Along the first 33 km, from the coast to stake E40, annual measurements show considerable inter-annual variability, 52% of which can be explained by the spatio-temporal homogeneity of the balance distribution. From stake E40 to stake R60, a distance of 170 km, the almost periodic oscillations in the accumulation with a wavelength close to 40 km can be explained by the formation of a gravity-inertia wave, disturbing the geostrophic equilibrium, occurring at the break in slope 200 km from the coast. The very low values of accumulation for stakes D55 and D58S show that the oscillations were almost stationary during the study period (about 25 years). Finally, along the 840 km from stake R60 to Dome C a decrease in accumulation resulting from the decrease in mean temperature can be observed. (Auth. mod.)

41-4305
On the special rheological properties of ancient microparticle-laden Northern Hemisphere ice as derived from bore-hole and core measurements.
Fisher, D.A., et al, *Journal of glaciology*, 1986, 32(112), p.501-510, 30 refs., With French and German summaries.
Koerner, R.M.
Ice creep, Impurities, Ice microstructure, Ice deformation, Drill core analysis, Ice composition, Strains, Paleoclimatology, Particles, Boreholes, Rheology.

41-4306
Rate of short-term ablation of exposed ground ice, Banks Island, Northwest Territories, Canada.
Lewkowicz, A.G., *Journal of glaciology*, 1986, 32(112), p.511-519, 34 refs., With French and German summaries.
Ground ice, Ablation, Heat flux, Permafrost heat transfer, Meteorological factors, Solar radiation, Moraines, Latent heat, Analysis (mathematics), Canada—Northwest Territories—Banks Island.

41-4307
Crystallographic study of the perennially frozen ice surface of Patterned Lake, Framnes Mountains, East Antarctica.
Chambers, J.L.C., et al, *Journal of glaciology*, 1986, 32(112), p.520-526, 10 refs., With French and German summaries.
Wilson, C.J.L., Adamson, D.A.
Limnology, Ice crystals, Frozen lakes, Ice microstructure, Grain size, Antarctica—Framnes Mountains.
Interlocking rectangular ice patterns, with dimensions of several meters, on the surface of a perennial frozen lake in East Antarctica can be related to a strong crystallographic orientation in the underlying ice. Most of the surface patterns are characterized by parallel centimeter-scale ridges and furrows that correspond to an aggregate of tabular-shaped grains. Grain elongation is parallel to the basal plane. The c-axis distribution within each ice pattern lies in a horizontal plane. It defines a discrete maximum perpendicular to the surface ridges and to the long axis of the rectangular pattern. Areas exhibiting no patterning are composed of variably orientated ice grains. The strong c-axis horizontal orientation and the distinctive morphology of these ice patterns are interpreted as having developed by a geometric enhancement over a long period of time (Auth.)

41-4308
Recent fluctuations of Rakhiot Glacier, Nanga Parbat, Punjab Himalaya, Pakistan.
Gardner, J.S., *Journal of glaciology*, 1986, 32(112), p.527-529, 10 refs., With French and German summaries.
Glacier oscillation, Glacier surfaces, Glacier surveys, Surface properties, Distribution, Velocity, Himalaya Mountains.

41-4309
Finite-element simulation of the thermal regime of the Erebus Glacier Tongue, Antarctica.
Stolle, D.F.E., et al, *Journal of glaciology*, 1986, 32(112), p.530-534, 8 refs., With French and German summaries.
Mirza, F.A.
Ice models, Glacier tongues, Ice temperature, Ice creep, Conduction, Glacier surveys, Antarctica—Erebus Glacier Tongue.
Finite-element method is used to determine the temperature distribution within the Erebus Glacier Tongue based on information from short-term observations. It is shown that, provided the up-stream temperature profile along the depth is known, steady-state assumptions are reliable for computing the temperature field within most of the ice mass at any given time for a glacier tongue. Numerical results from analyses of the Erebus Glacier Tongue also indicate that the main transport of heat is through advection as expected and, hence, a realistic estimate of the velocity field becomes important. (Auth.)

41-4310
Field test to assess snow-slope stability.
Conway, H., et al, *Journal of glaciology*, 1986, 32(112), p.535-537, 5 refs., With French and German summaries.
Abrahamson, J., Young, R.
Snow cover stability, Slopes, Snow strength, Avalanche formation, Shear strength, Snow stratigraphy, Tests.

41-4311
Method of measuring liquid water mass fraction of snow by alcohol solution.
Fisk, D.J., *Journal of glaciology*, 1986, 32(112), MP 2245, p.538-541, 3 refs., With French and German summaries.
Snow water content, Unfrozen water content, Temperature measurement, Measuring instruments, Theories, Heat transfer.
A method of making field measurements of the liquid water fraction of snow has been developed in which a snow sample is dissolved in methanol to produce a temperature depression. The depression is linearly related to the liquid water content of the snow sample. A single operator can perform four to five measurements per hour with a maximum absolute error of 1.0%.

41-4312
Snow chemistry from Xixabangma Peak, Tibet.
Mayewski, P.A., et al, *Journal of glaciology*, 1986, 32(112), p.542-543, 6 refs., With French and German summaries.
Lyons, W.B., Spencer, M.J., Clayton, J.L.
Snow composition, Chemical analysis, Snow crystal structure, Snowfall, Mountains, Spectroscopy, Tibet—Xixabangma Glacier.

41-4313
Forest hydrology and watershed management.
Swanson, R.H., ed, *International Association of Hydrological Sciences. Publication*, 1987, No.167, 625p., Proceedings of an international symposium held during the 19th General Assembly of the International Union of Geodesy and Geophysics at Vancouver, BC, Canada, 9-22 Aug. 1987. With French summaries. Refs. passim. For selected papers see 41-4314 through 41-4319.
Bernier, P.Y., ed, Woodard, P.D., ed.
Hydrology, Forest land, Meltwater, Runoff, Watersheds, Meetings, Seasonal variations, Forest strips, Snowmelt.

41-4314
Dynamics and mass balance of NO3 anion and SO4(2) anion in meltwater and surface-runoff during spring melt in a boreal forest.
Jones, H.G., et al, *International Association of Hydrological Sciences. Publication*, 1987, No.167, Forest hydrology and watershed management. Edited by R.H. Swanson, P.Y. Bernier and P.D. Woodard, p.19-31, 21 refs., With French summary.
Bédard, Y.
Meltwater, Water chemistry, Forest land, Runoff, Ion density (concentration), Soil chemistry, Stream flow, Ground water.

41-4315
Sources of acidity during snowmelt at a forested site in the west-central Adirondack Mountains, New York.
Peters, N.E., et al, *International Association of Hydrological Sciences. Publication*, 1987, No.167, Forest hydrology and watershed management. Edited by R.H. Swanson, P.Y. Bernier and P.D. Woodard, p.99-108, 18 refs., With French summary.
Driscoll, C.T.
Meltwater, Water chemistry, Forest land, Snowmelt, Mountains, Forest soils, Precipitation (meteorology), Ion density (concentration), Streams.

41-4316
Water release from a forested snowpack during rainfall.
Kattelmann, R., *International Association of Hydrological Sciences. Publication*, 1987, No.167, Forest hydrology and watershed management. Edited by R.H. Swanson, P.Y. Bernier and P.D. Woodard, p.265-272, 23 refs., With French summary.
Meltwater, Floods, Forest canopy, Runoff, Rain, Wind velocity.

41-4317
Forest harvest, snowmelt and streamflow in the central Sierra Nevada.
MacDonald, L.H., *International Association of Hydrological Sciences. Publication*, 1987, No.167, Forest hydrology and watershed management. Edited by R.H. Swanson, P.Y. Bernier and P.D. Woodard, p.273-283, 18 refs., With French summary.
Snowmelt, Stream flow, Forestry, Forest strips, Snow accumulation, Mountains, Snow water equivalent, Tests, Water table, Soil water, United States—California—Sierra Nevada.

41-4318
Snow redistribution: strip cuts at Yuba Pass, California.
McGurk, B.J., et al, *International Association of Hydrological Sciences. Publication*, 1987, No.167, Forest hydrology and watershed management. Edited by R.H. Swanson, P.Y. Bernier and P.D. Woodard, p.285-295, 6 refs., With French summary.
Berg, N.H.
Snow cover distribution, Forest strips, Snowmelt, Snow depth, Snow water equivalent, Runoff.

41-4319
Effects of forests on wetland runoff during spring.
Woo, M.-K., et al, *International Association of Hydrological Sciences. Publication*, 1987, No.167, Forest hydrology and watershed management. Edited by R.H. Swanson, P.Y. Bernier and P.D. Woodard, p.297-307, 10 refs., With French summary.
Heron, R.
Runoff, Snowmelt, Snow accumulation, Forest land, Meltwater, Ground water, Snowdrifts, Seasonal variations, Water supply.

41-4320
Hydraulic conveying of snow. 9. Development of techniques for high snow concentration.
Tokunaga, Y., et al, *Seppyo*, June 1987, 49(2), p.59-66, In Japanese with English summary. 14 refs.
Hashimoto, T., Mizuguchi, K., Shirakashi, M.
Snow removal, Hydraulics, Pipelines, Flow rate, Water flow.

41-4321
Parameterization of critical wind speed to cause drifting snow.
Kondo, J., *Seppyo*, June 1987, 49(2), p.67-73, In Japanese with English summary. 27 refs.
Snowdrifts, Wind velocity, Snow density, Snow surface, Surface properties, Analysis (mathematics), Snow crystals.

41-4322
Method for evaluating the frost-susceptibility of a soil based on the condition of ice lens formation.
Takeda, K., *Seppyo*, June 1987, 49(2), p.75-86, In Japanese with English summary. 13 refs.
Ground ice, Soil freezing, Frost resistance, Ice lenses, Ice formation, Soil temperature, Frost heave, Temperature gradients, Tests.

41-4323
Sediment transport characteristics of selected streams in the Susitna River basin, Alaska, October 1983 to September 1984.
Knott, J.M., et al, *U.S. Geological Survey. Open-file report*, 1986, 86-424W, 73p., 13 refs.
Lipscomb, S.W., Lewis, T.W.
Sediment transport, Stream flow, Hydraulics, River basins, Suspended sediments, Climatic factors, United States—Alaska—Susitna River.

41-4324
Chronology of the last interglacial/glacial cycle in Greenland: first approximation.
Funder, S., Correlation of Quaternary Chronologies, edited by W.C. Mahaney, [1984], p.261-278, From a symposium held May 1983, Toronto, Canada. Refs. p.275-278.
Glaciology, Quaternary deposits, Ice cores, Marine deposits, Lithology, History, Greenland.

41-4325
220-year continuous record of volcanic H2SO4 in the antarctic ice sheet.
Legrand, M., et al, *Nature*, June 25, 1987, 327(6124), p.671-676, 35 refs.
Delmas, R.J.
Ice cores, Drill core analysis, Volcanic ash, Snow composition, Fallout, Antarctica—Vostok Station, Antarctica—Amundsen-Scott Station.
Continuous H2SO4 profiles observed in snow from several antarctic locations reveal 4 major volcanic events of the past two centuries (Agung, Krakatoa, Tambora and another large-scale event not recorded historically). Acid deposition and interhemispheric distribution mechanisms are quantified and then used to obtain an order of magnitude estimate for the H2SO4 emissions from these eruptions. (Auth.)

41-4326
Technical support for the CONUS OTH-B Experimental Radar System.
Washburn, T.M., et al, *SRI international, Menlo Park, CA. Semiannual technical report*, Mar. 1980, No.17, 30p., ADB-047 307L, 3 refs.
Lomasney, J.M., Marshall, W.F., Westover, D.E.
Antennas, Snow cover effect, Snow electrical properties, Snow depth, Experimentation, Dielectric properties, Noise (sound).

41-4327
Oceanographic influences on the sea ice cover in the Sea of Okhotsk.
Gratz, A.J., et al, *U.S. National Aeronautics and Space Administration. Technical memorandum*, Feb. 1981, No.82085, 18p., N81-19734, 7 refs.
Parkinson, C.L.
Oceanography, Sea ice distribution, Ice cover effect, Remote sensing, Ice conditions, Drift, Ocean currents, Radiometry, Microwaves, Ice edge, Okhotsk Sea.

41-4328
Intrinsic curve of ice under compression. [Courbe intrinseque de la glace en compression]
Nardeau, J.P., et al, *Journal de physique*, Mar. 1987, 48(3) Supplement, p.(C1)322-(C1)327, In French with English summary. 16 refs.
Michel, B.
Ice physics, Ice pressure, Compressive properties, Ice deformation, Strains, Icebergs, Ice surface, Phase transformations, Tests.

41-4329
Pneumatic conveying of ice into deep mines.
Correia, R.M., et al, *Journal of pipelines*, Apr. 1987, 6(2), p.155-167, 4 refs.
Sheer, T.J., Chaplain, E.J.
Pipe flow, Cooling systems, Mining.

41-4330
Erosion of ices by ion irradiation.
Benit, J., et al, *Nuclear instruments and methods in physics research*, Feb. 1987, B19/20(2), p.838-842, 10 refs
Ice erosion, Ions, Water films.

41-4331
Ice prediction package cuts costs on Cheshire's gritting operation. *Highways*, Apr. 1987, 55(1924), p.20-22
Salting, Cost analysis, Road icing, Ice forecasting.

41-4332
Analysis and computation of regimes of major mountain glacier systems. [Puti analiza i rascheta rezhima krupnykh gornykh lednikovykh sistem],
Krenke, A.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.4-9, 125-130, In Russian and English. 11 refs.
Glacier ice, Mountain glaciers, Glacier alimentation, Glacier ablation, Glacier mass balance, Snow cover distribution, Systems analysis, Mass transfer.

41-4333
Preliminary glacio-hydrological comparison of some glaciers of the Swiss Alps and the Chinese Tian Shan. [Predvaritel'noe gliatsiogidrologicheskoe sravnenie nekotorykh lednikov shveitsarskikh Al'p i kitaiskogo Tian'-Shania],
Kang, E., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.9-18, 130-139, In Russian and English. 10 refs.
Mountain glaciers, Glacial hydrology, Glacier oscillation, Glacier mass balance, Alimentation, Glacier ablation, Climatic factors.

41-4334
Rock glaciers in the dry Andes. [Kamennye gletchery v sukhikh Andakh],
Lliboutry, L., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.18-25, 139-144, In Russian and English. 17 refs.
Glacier flow, Rock glaciers, Glacier mass balance, Origin, Structure.

41-4335
Influence of katabatic wind on the ablation of snow and ice masses. [Vliianie katabaticheskogo vetra na abliatsiiu mass snega i l'da],
Ohata, T., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.25-29, 144-147, In Russian and English. 12 refs.
Mathematical models, Mountain glaciers, Glacier surfaces, Wind factors, Snow cover distribution, Ablation, Glacier mass balance.

41-4336
Influence of atmospheric circulation on thermal regime and ablation of the Tuyuksu Glacier. [Vliianie atmosfernoi tsirkuliatsii na energeticheskii rezhim i abliatsiiu lednika Tuiuksu],
Golovkova, R.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.29-34, 148-152, In Russian and English. 11 refs.
Denisova, T.IA., Tokmagambetov, G.A.
Glacial meteorology, Glacier mass balance, Mountain glaciers, Glacier ablation, Thermal regime, Atmospheric circulation.

41-4337
Dynamics and thermal regime of glaciers. [Dinamika i teplovoi rezhim lednikov],
Shumskii, P.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.34-39, 152-157, In Russian and English. 10 refs.
Krass, M.S.
Ice sheets, Mathematical models, Ice cover thickness, Glacier flow, Heat balance, Land ice, Glacier mass balance, Glaciation.

41-4338
Influence of internal accumulation and the formation of congelation ice on mass balance of the McCall glacier, Alaska. [Vliianie vnutrennego pitaniia i formirovaniia nalozhennogo l'da na balans massy lednika Makkol na Aliaske],
Trabant, D.C., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.40-49, 157-165, In Russian and English. 23 refs.
Benson, C.S.
Glacier ice, Ice surface, Ice accretion, Glacier mass balance, Glacier alimentation, Glacier ablation.

41-4339
Meltwater seepage on temperate and cold glaciers. [Infil'tratsiia talol vody na teplykh i kholodnykh lednikakh],
Bazhev, A.B., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.50-55, 165-170, In Russian and English. 8 refs.
Glacier ice, Ice surface, Snow cover distribution, Firn, Meltwater, Seepage.

41-4340
Mass balance of Central Asia glaciers and its relation to river runoff. [Balans massy lednikov Srednei Azii i ego sviaz' so stokom rek],
Akbarov, A.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.56-59, 170-173, In Russian and English. 8 refs.
Suslov, V.F.
Glacier ice, Glacier mass balance, Glacial rivers, Runoff, Glacier ablation.

41-4341
Runoff in basins with variable extent of glaciation. [Stok v basseinakh s raznoi stepen'iu oledeneniia],
Oerter, H., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.59-64, 173-178, In Russian and English. 8 refs.
Zunke, D.
River basins, Mountain glaciers, Glacial rivers, Glacier ablation, Meltwater, Runoff.

41-4342
Modeling runoff from Vernagtferner glacier, the Oetztal Alps, Austria. [Modelirovanie stoka s lednika Fernagtferner v Etstal'skikh Al'pakh],
Escher-Vetter, H., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.65-69, 178-182, In Russian and English. 9 refs.
Oerter, H., Zunke, D., Reinwarth, O.
Mountain glaciers, Glacier ablation, Runoff, Mathematical models.

41-4343
Calculating runoff hydrograph for the Marukh mountain-glacier basin, Caucasus. [Raschet gidrografa stoka gorno-lednikovogo basseina Marukh na Kavkaze],
Balaeva, V.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.69-74, 182-186, In Russian and English. 6 refs.
Freidlin, V.S.
Mathematical models, Mountain glaciers, Glacier ablation, Runoff.

41-4344
Forecasting glacial runoff in river basins of Central Asia. [Metody prognoza lednikovogo stoka v basseinakh rek Srednei Azii],
Konovalov, V.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.75-78, 187-191, In Russian and English.
River basins, Mountain glaciers, Glacier ice, Ice volume, Glacier ablation, Snow cover distribution, Snowmelt, Firn.

41-4345
Trends in variations of mountain river runoff in the USSR related to climatic changes. [Napravlennost' izmenenii stoka gornykh rek SSSR v sviazi s izmeneniiami klimata],
Semenov, V.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.78-82, 191-195, In Russian and English. 9 refs.
Alekseeva, A.K., Degtiarenko, T.I.
River basins, Mountain glaciers, Climatic changes, Glacial rivers, Runoff.

41-4346
Role of major floods in glacier basins. [Rol' krupnykh pavodkov v lednikovykh basseinakh],
Johnson, P.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.82-87, 195-200, In Russian and English. 5 refs.
Power, J.M.
Mountain glaciers, Floods, Snow cover distribution, Firn, Snowmelt, Slope processes.

41-4347
Possible mechanism of surges originating in bodies of pulsating glaciers. [Vozmozhnyi mekhanizm vozniknoveniia serdzha v tele pul'siriuishchego lednika],
Kazanskii, A.B., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.87-92, 200-205, In Russian and English. 9 refs.
Mountain glaciers, Glacier mass balance, Glacier flow, Glacier surges, Glacier oscillation, Mathematical models.

41-4348
Diagnostics, statistical analysis and classification of instabilities in glacier dynamics. [Voprosy diagnostiki, statisticheskogo analiza i klassifikatsii nestabil'nostei v dinamike lednikov],
Rototaev, K.P., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.92-96, 205-209, In Russian and English. 1 ref.
Mathematical models, Glacier oscillation, Glacier surges, Glacier mass balance.

41-4349
Modeling glacier surges and climatically induced fluctuations. [Modelirovanie serdzhei i klimaticheski obuslovlennykh kolebanii lednikov],
Mazo, V.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Oct. 1986, Vol.58, p.97-102, 210-214, In Russian and English. 15 refs.
Salamatin, A.N.
Mathematical models, Glacier oscillation, Mountain glaciers, Glacier surges, Climatic factors.

41-4350
Engineering protection of mountainous regions from dangerous glacial processes. [Nekotorye aspekty inzhenernoi zashchity gornykh territorii ot opasnykh gliatsial'nykh protsessov],
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41-4363
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41-4365
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Vegetation and a Landsat-derived land cover map of the Beechey Point quadrangle, Arctic Coastal Plain, Alaska.
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Tundra, Vegetation, Geobotanical interpretation, Mapping, Remote sensing, LANDSAT, Landscapes, Patterned ground, Classifications, United States—Alaska—Beechey Point.
This report presents a Landsat-derived land cover classification of the Beechey Point, Alaska, 1:250,000-scale quadrangle with descriptions of the major vegetation units. Eight Landsat-level units derived from multispectral scanner data, eleven photo-interpreted units, and eight common vegetation complexes are described and illustrated. Procedures of Landsat analysis, field methods, and cartographic methods are described. The region is divided into four landscape units: flat thaw-lake plains, gently rolling thaw-lake plains, hills, and flood plains. Area analysis of the quadrangle was done according to townships and nine small study areas. The map uses a modified version of the hierarchical tundra mapping classification of Walker (1983). Area-measurement data from geobotanical maps at eight study sites are compared with similar data from Landsat maps of the same sites. The results indicate that Landsat maps yield area measurements corresponding to broad geobotanical categories.

41-4368
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Ice electrical properties, Electromagnetic properties, Sea ice, Remote sensing, Dielectric properties, Brines, Ice salinity, Ice cover thickness, Temperature effects, Analysis (mathematics).
Two-phase dielectric mixing model results are presented showing the electromagnetic (EM) properties of sea ice versus depth. The modeled data are compared with field measurements and show comparable results. It is also shown how the model data can be used in support of impulse radar and airborne electromagnetic (AEM) remote sensing of sea ice. Examples of the remote measurement of sea ice thickness using impulse radar operating in the 80- to 300-MHz frequency band and low-frequency (500 to 30,000 Hz) sounding techniques are presented and discussed.

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Supercooled clouds, Unfrozen water content, Remote sensing, Radiometry, Microwaves, Mountains, Winter, Hoarfrost.

41-4372
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41-4373
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41-4375
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41-4376
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41-4377
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Hailstone structure, Ice microstructure, Supercooled clouds, Snow pellets, Particle size distribution.

41-4378
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Snow pellets, Ice crystal growth, Cloud droplets, Freezing, Supersaturation, Coalescence, Temperature effects.

41-4379
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41-4380
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Artificial ice, Ice crystals, Aggregates, Wind tunnels, Hoarfrost, Snowflakes, Density (mass/volume).

41-4381
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Wang, A.S.
Ice crystal growth, Supercooled clouds, Ice crystal nuclei, Temperature variations.

41-4382
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41-4383
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Snow pellets, Snow crystal nuclei, Cloud droplets, Snow crystal structure, Freezing, Ice crystal nuclei, Meteorological factors.

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41-4385
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Ice crystal growth, Cloud droplets, Atmospheric circulation, Aggregates, Ice crystal structure, Experimentation, Models.

41-4386
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Jallo, N.
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41-4387
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Ice crystal growth, Cloud physics, Cold chambers, Supersaturation, Temperature effects, Models, Experimentation.

41-4388
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41-4389
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41-4390
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Grant, L.O.
Ice crystal nuclei, Cloud physics, Ice crystal growth, Cloud droplets, Supersaturation, Airborne equipment, Distribution.

41-4391
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Gayet, J.F., Soulage, R.G.
Cloud physics, Ice crystal growth, Ice crystal nuclei, Temperature effects, Distribution.

41-4392
Secondary ice particle production by rime fragmentation and crystal breakup.
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Choularton, T.W.
Ice crystal growth, Hoarfrost, Cloud physics, Unfrozen water content, Water vapor, Temperature effects, Experimentation.

41-4393
Numerical method for integrating the coalescence kinetic equations for cloud droplets and ice particles.
Yenukashvili, I.M., International Cloud Physics Conference, 9th, Tallin, Aug. 21-28, 1984. Proceedings, Vol.1, Tallin, Valgus, 1984, p.247-248, 7 refs.
Cloud droplets, Ice crystals, Supercooled clouds, Coalescence, Analysis (mathematics), Particles, Time factor.

41-4394
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Cheng, L., Knight, N.C.
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41-4395
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Gong, N., Wang, A.S.
Snow pellets, Hailstones, Cloud physics, Supercooled fog, Ice crystal growth, Cloud chambers, Origin, Time factor, Temperature effects.

41-4396
Numerical modelling of hail to rain conversion.
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List, R.
Hailstone growth, Cloud physics, Ice water interface, Rain, Mathematical models, Freezing.

41-4397
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41-4398
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41-4399
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Garcfa-Garcfa, F., Stewart, R.E., McDonald, D.B.
Hailstone growth, Ice melting, Wind tunnels, Rain, Photography, Artificial hailstones, Temperature effects, Models.

41-4400
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Snow melting, Snowflakes, Precipitation (meteorology), Air temperature, Wind tunnels, Falling bodies, Experimentation, Humidity.

41-4401
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Franzini, A., Santachiara, G.
Ice accretion, Ice growth, Ice density, Wind tunnels, Porous materials, Hailstone structure, Ice crystal structure.

41-4402
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Khorguani, V.G.
Hailstone growth, Hailstone structure, Snow pellets, Cloud droplets, Ice crystal growth, Temperature effects, Aerosols.

41-4403
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Snowfall, Cloud seeding, Precipitation (meteorology), Ice crystals, Velocity, Storms, Mountains, Winter, Temperature effects, United States—California.

41-4404
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Hailstone growth, Hoarfrost, Ice density, Cloud physics, Ice crystals, Models.

41-4405
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Hailstone growth, Cloud physics, Mathematical models, Dynamic properties, Velocity.

41-4406
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41-4407
Numerical simulation of an Alberta hailstorm.
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MacPherson, S.
Hail, Ice storms, Cloud physics, Ice crystal nuclei, Ice melting, Snow pellets, Mathematical models, Radar echoes, Canada—Alberta.

41-4408
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Perry, S.J.
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41-4409
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Snowflakes, Cloud physics, Snow pellets, Ice crystals, Topographic features, Wind velocity, Coalescence, Mathematical models, Temperature effects, Aggregates.

41-4410
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Yan, C.
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41-4411
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41-4412
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Kochtubajda, B.
Cloud seeding, Ice crystal growth, Precipitation (meteorology), Cloud physics, Nucleating agents, Radar echoes, Dry ice (trademark), Silver iodide, Rain.

41-4413
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41-4414
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Icing, Ice accretion, Ice density, Cloud physics, Models, Wind tunnels, Analysis (mathematics).

41-4415
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Aircraft icing, Ice accretion, Ice crystal size, Supercooled clouds, Heat transfer, Wind tunnels, Surface roughness.

41-4416
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Supercooled clouds, Aircraft icing, Cloud physics, Cloud droplets, Air temperature, Altitude.

41-4417
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41-4418
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Illingworth, A.J., et al, International Cloud Physics Conference, 9th, Tallin, Aug. 21-28, 1984. Proceedings, Vol.3, Tallin, Valgus, 1984, p.787-790, 10 refs.
Goddard, J.W.F., Cherry, S.M.
Ice crystal growth, Supercooled clouds, Cloud physics, Ice detection, Phase transformations, Raindrops, Radar echoes, Hailstones.

41-4419
Microphysical interpretation of radar polarization measurements.
Jameson, A.R., International Cloud Physics Conference, 9th, Tallin, Aug. 21-28, 1984. Proceedings, Vol.3, Tallin, Valgus, 1984, p.791-792, 12 refs.
Cloud physics, Hail, Snowflakes, Raindrops, Precipitation (meteorology).

41-4420
Influence of the complex permittivity of the water on radar studies of convective clouds.
Kolev, S., et al, International Cloud Physics Conference, 9th, Tallin, Aug. 21-28, 1984. Proceedings, Vol.3, Tallin, Valgus, 1984, p.793-796, 11 refs.
Stoianov, S., Kovachev, D.
Cloud physics, Ice storms, Hail, Supercooled clouds, Phase transformations, Electrical properties, Analysis (mathematics).

41-4421
Orographic cloud microphysical observations with dual-channel microwave radiometer, K(u)-band radar and polarization lidar.
Sassen, K., International Cloud Physics Conference, 9th, Tallin, Aug. 21-28, 1984. Proceedings, Vol.3, Tallin, Valgus, 1984, p.801-804, 4 refs.
Cloud physics, Snowfall, Supercooled clouds, Remote sensing, Storms, Precipitation (meteorology), Microwaves, Radiometry.

41-4422
Bispectral method for the height determination of optically thin ice clouds.
Wendling, P., et al, International Cloud Physics Conference, 9th, Tallin, Aug. 21-28, 1984. Proceedings, Vol.3, Tallin, Valgus, 1984, p.827-830, 7 refs.
Pollinger, W.
Supercooled clouds, Remote sensing, Ice crystals, Height finding, Distribution, Temperature measurement.

41-4423
Life and death of a Martian impact crater that underwent thermokarst development. [Vie et mort d'un cratère d'impact à évolution cryokarstique sur Mars], Costard, F., *Revue de géomorphologie dynamique,* 1986, 25(4), p.123-131, In French with English summary. 22 refs.
Extraterrestrial ice, Permafrost, Mars (planet), Thermokarst, Remote sensing, Geothermal thawing, Ice lenses, Cryogenic textures, Fossil ice.

41-4424
Examination of double-plate ice crystals and the initiation of precipitation in continental cumulus clouds.
Bruintjes, R.T., et al, *Journal of the atmospheric sciences,* May 1, 1987, 44(9), p.1331-1349, 41 refs.
Heymsfield, A.J., Krauss, T.W.
Cloud physics, Ice crystal structure, Precipitation (meteorology).

41-4425
Proceedings.
Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 1986, *Annals of glaciology,* 1987, Vol.9, 264p., For individual papers see 41-4426 through 41-4465 or C-36068, C-36070, C-36077, C-36080, F-36067, F-36071 through F-36076, F-36079, G-36078, and L-36069.
Meetings, Glaciology, Remote sensing.
The Symposium attracted 91 participants from 17 countries. Forty of the presented papers are included in this volume along with abstracts of 12 papers presented but not published in this volume and 17 papers accepted but not presented at the Symposium. Topics ranged from sea ice to ice sheets, glaciers, icebergs, ice shelves, firn, and earthquakes with ice streams, occurring in the Arctic Ocean, the Antarctic Ocean and Continent, Greenland, and the Canadian Archipelago. Ground and airborne radio echo sounding, SAR, satellite-borne altimetry, and seismic sounding are among the techniques used to examine and measure these phenomena.

41-4426
Texture of polar firn for remote sensing.
Alley, R.B., *Annals of glaciology,* 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.1-4, 14 refs.
Firn, Ice structure, Remote sensing, Ice density, Grain size, Particle size distribution, Microwaves, Antarctica—Ross Ice Shelf.
Knowledge of the texture of polar firn is necessary for interpretation of remotely sensed data. Dry polar firn is an irregularly stratified, anisotropic medium. Grains in firn may be approximated as prolate spheroids with average axial ratios as high as 1.2 or greater and with a preferred orientation of long axes clustered around the vertical. Such elongate grains are preferentially bonded near their ends into vertical columns, so that grain bonds show a preferred horizontal orientation. The grain-size distribution is similar in most firn and the normalized distribution is stationary in time, but the distribution is somewhat different in depth hoar. Fluctuations of firn properties are large near any depth, but decrease with increasing depth. With increasing depth, anisotropy of surfaces decreases, bond size relative to grain size decreases slightly, and number of bonds per grain and fraction of total grain surface in bonds increase. Grain size increases linearly with age below 2 to 5 m, but increases more rapidly in shallower firn. Sterologic quantities are calculated from thin sections of ice taken from site 4530, ice stream A, West Antarctica. Results are shown in tables and diagrams. (Auth. mod.)

41-4427
Internal reflecting horizons in Spitsbergen glaciers.
Bamber, J.L., *Annals of glaciology,* 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.5-10, 20 refs.
Glacier surveys, Radio echo soundings, Glacier thickness, Glacier beds, Glacier surfaces, Subglacial drainage, Reflection, Ice cores, Drill core analysis, Norway—Spitsbergen.

41-4428
Glaciological investigations using the synthetic aperture radar imaging system.
Bindschadler, R.A., et al, *Annals of glaciology,* 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.11-19, 19 refs.
Jezek, K.C., Crawford, J.
Ice sheets, Remote sensing, Glaciology, Airborne radar, Ice surface, Ice creep, Crevasses, Icebergs, Lake ice, River ice, LANDSAT, Greenland.

41-4429
Remote sensing of the Ross Ice Streams and adjacent Ross Ice Shelf, Antarctica.
Bentley, C.R., et al, *Annals of glaciology,* 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.20-29, 35 refs.
Aerial surveys, Seismic surveys, Ice shelves, Mapping, Antarctica—Ross Ice Shelf.
In the first few seasons of the Antarctic Siple Coast project, the University of Wisconsin has concentrated on radar and seismic studies. Highlights of the results to date include the delineation of ice streams A, B, and C and the ridges in between, determination of the surface elevations over the area, discovery of a much more advanced grounding line than previously recognized and recognition of a broad, flat, barely grounded "ice plain" just inside the grounding line. Complex zones between and adjoining some of the ice streams, characterized by an interspersal of undisturbed ice and crevassed patches, give the impression of being transformed from sheet flow into stream flow in a process of ice stream expansion. An indicated negative mass balance for ice stream B could be the result of this "activation" process. Ice stream C, currently stagnant, exhibits terraces and reversals of surface slope, associated with zones of strong, steady basal radar reflections. These features suggest that subglacial water has been trapped by reversals in the hydraulic pressure gradient. (Auth. mod.)

41-4430
Microearthquakes under and alongside Ice Stream B, Antarctica, detected by a new passive seismic array.
Blankenship, D.D., et al, *Annals of glaciology,* 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.30-34, 15 refs.
Anandakrishnan, S., Kempf, J.L., Bentley, C.R.
Ice shelves, Earthquakes, Seismology, Antarctica—Ross Ice Shelf.
A new seismographic array with a band width of 500 Hz per channel and a dynamic range of 96 dB was developed for detecting natural events on glaciers. It was first deployed on ice stream B during the 1985-86 austral summer. The network consists of nine solar-powered seismographs, each monitoring three components of ground motion. Each of the seismographs is connected by up to 4 km of fiber-optic cable to a central node where seismic events are both detected and recorded. During 85 h of passive seismic monitoring on ice stream B, 25 microearthquakes were observed. Sixteen of these events were associated with shallow crevassing, mostly near the margins, although not within the zones of extreme shearing that bound the ice streams. Nine microearthquakes were associated with low-angle thrusting near the base of the ice stream. The principal initial result of these passive seismic studies is the demonstration that virtually none of the energy dissipated beneath ice stream B takes place through brittle fracture near the base. Nevertheless, fracture associated with microearthquakes may play a significant role in sub-glacial erosion. (Auth.)

41-4431
Stagnant ice at the bed of White Glacier, Axel Heiberg Island, N.W.T., Canada.
Blatter, H., *Annals of glaciology,* 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.35-38, 17 refs.
Glacier flow, Glacier tongues, Glacier thickness, Radio echo soundings, Ice temperature, Glacier beds, Topographic features, Canada—Northwest Territories—White Glacier.

41-4432
Nimbus-7 SMMR derived global snow cover parameters.
Chang, A.T.C., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.39-44, 17 refs.
Foster, J.L., Hall, D.K.
Snow cover distribution, Snow water equivalent, Remote sensing, Snow depth, Microwaves, Maps, Brightness, Snow temperature.

41-4433
Ground data inputs to image processing for estimating terrain characteristics for glacio-hydrological analysis.
Clark, M.J., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.45-49, 4 refs.
Gurnell, A.M., Hancock, P.J.
Glacial hydrology, Remote sensing, Photointerpretation, Radiometry, Profiles, Topographic features.

41-4434
Interface tracking in digitally recorded glaciological data.
Cooper, A.P.R., *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.50-54, 10 refs.
Glacier beds, Radio echo soundings, Glaciology, Data processing, Analysis (mathematics), Computer applications.

41-4435
Seasat altimeter observations of an antarctic "lake".
Cudlip, W., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.55-59, 16 refs.
McIntyre, N.F.
Ice sheets, Radio echo soundings, Subglacial drainage, Glacial lakes.
This paper reports an analysis of Seasat altimeter observations of an extremely flat area on the surface of the East Antarctic ice sheet, approximately 30 km in extent, centered at 68.6 S 136.0 E and close to the edge of the sub-glacial Astrolabe Basin. It has a regional slope of between zero and 0.01 deg and non-random variations in height along track of about 1 m on the scale of a few km. The average radar backscatter coefficient is 5 dB in the region of of the Astrolabe Basin, compared to a more usual value of about 10 dB for other areas of the ice sheet. A computer enhanced Landsat image of the region clearly shows the rougher steeper terrain to the North, with the surface in and around the flat area appearing totally smooth and featureless. NSF/SPRI/TUD radio echo-sounding data from the region, although limited in extent, shows a relatively strong signal (indicative of ice at the pressure melting point) over a large region. The signal under the flat area, however, is particularly strong and smooth, confirming the association between the surface feature and a bedrock lake 3800 m below. (Auth.)

41-4436
Multi-sensor approach to the interpretation of radar altimeter wave forms from two Arctic ice caps.
Drinkwater, M.R., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.60-68, 22 refs.
Dowdeswell, J.A.
Ice sheets, Airborne radar, Radar echoes, Surface roughness, Radio echo soundings, Photography, LANDSAT.

41-4437
Method to estimate open pack-ice thickness from two-day sequences of side-lapping satellite images.
Feldman, U., *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.69-71, 5 refs.
Ice cover thickness, Drift, Remote sensing, Pack ice, Sea ice, Ice edge, LANDSAT, Wind velocity, Ice floes.

41-4438
Comparison of the surface conditions of the inland ice sheet, Dronning Maud Land, Antarctica, derived from NOAA AVHRR data with ground observation.
Fujii, Y., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.72-75, 6 refs.
Yamanouchi, T., Suzuki, K., Tanaka, S.
Ice sheets, Spaceborne photography, Surface structure, Antarctica—Queen Maud Land.
The surface conditions of the inland ice sheet in east Dronning Maud Land, Antarctica, are derived from the NOAA-7 AVHRR data received at Showa Station and then compared with the ground observations which were collected in Nov. 1984 along a 243 km long traverse route at altitudes ranging from 2700 to 3400 m a.s.l. The variations in the AVHRR data are well related to the distribution of glazed surfaces. The areas with lower albedo, higher surface temperature, lower ratio of channel 2/channel 1, and lower T4-T5 coincide with the areas where a glazed surface has developed. This result is attributed to the fact that the glazed surface is composed of a multi-layered ice crust and that its radiative and thermal properties are closer to ice than to snow. The present study shows that the NOAA AVHRR data are useful for distinguishing bare ice, glazed surfaces, and snow surfaces of the antarctic ice sheet. (Auth.)

41-4439
Pattern recognition of air photographs for estimation of snow reserves.
Good, W., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.76-80, 10 refs.
Martinec, J.
Snow cover distribution, Snow water equivalent, Snowmelt, Remote sensing, Runoff, Floods, Snowfall, Seasonal variations, Photography, Mountains, Mapping.

41-4440
Digital radio echo-sounding and navigation recording system.
Gorman, M.R., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.81-84, 2 refs.
Cooper, A.P.R.
Ice surveys, Radio echo soundings, Ice solid interface, Navigator, Computer applications.

41-4441
Characteristics of the seasonal sea ice of East Antarctica and comparisons with satellite observations.
Jacka, T.H., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.85-91, 18 refs.
Allison, I., Thwaites, R., Wilson, J.C.
Sea ice distribution, Seasonal variations, Antarctica—East Antarctica.
A cruise to antarctic waters from late Oct. to mid Dec. 1985 provided the opportunity to study characteristics of the seasonal sea ice from a time close to that of maximum extent through early spring decay. The area covered by the observations extends from the northern ice limit to the antarctic coast between long. 50 E and 80 E. Shipboard observations included ice extent, type and thickness, and snow depth. Ice cores were drilled at several sites, providing data on salinity and structure. The observations verify the highly dynamic and divergent nature of the antarctic seasonal sea-ice zone. Floe size and thickness varied greatly at all locations, although generally increasing from north to south. A high percentage of the total ice mass exhibited a frazil crystal structure, indicative of the existence of open water in the vicinity. The ground based observations are compared with observations from satellite sensors. The remote sensing data include the visual channel imagery from NOAA 6, NOAA 9, and Meteor 11. Comparisons are made with the operational ice charts. (Auth.)

41-4442
Image-analysis techniques for determination of morphology and kinematics in Arctic sea ice.
Lee, M., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.92-96, 2 refs.
Yang, W.-L.
Ice structure, Ice mechanics, Sea ice, Remote sensing, Drift, Analysis (mathematics), Airborne radar, Ice formation, Ice deformation, Computer applications.

41-4443
Snow mapping and classification from Landsat thematic mapper data.
Dozier, J., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.97-103, 15 refs.
Marks, D.
Snow cover distribution, Remote sensing, Analysis (mathematics), Snow optics, Radiometry, Mapping, Grain size, Albedo, Snow impurities, LANDSAT.

41-4444
Characterization of snow and ice reflectance zones on glaciers using Landsat thematic mapper data.
Hall, D.K., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.104-108, 15 refs.
Ormsby, J.P., Bindschadler, R.A., Siddalingaiah, H.
Glacier surveys, Reflectivity, Glacier mass balance, Remote sensing, Glacier surfaces, Surface temperature, Radiometry, LANDSAT.

41-4445
Snow and ice studies by thematic mapper and multispectral scanner Landsat images.
Orheim, O., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.109-118, 12 refs.
Lucchitta, B.K.
Snow cover, Ice cover, Spaceborne photography.
Digitally enhanced Landsat Thematic Mapper (TM) images of Antarctica reveal snow and ice features to a detail never seen before in satellite images. The 6 TM reflective spectral bands have a nominal spatial resolution of 30 m, compared to 80 m for the Multispectral Scanner (MSS). TM bands 2-4 are similar to the MSS bands. TM infra-red bands 5 and 7 discriminate better between clouds and snow than MSS or the lower TM bands. They also reveal snow features related to grain-size and possibly other snow properties. These features are not observed in the visible wavelengths. Large features such as flow lines show best in the MSS and lower TM bands. Their visibility is due to photometric effects on slopes. TM thermal band 6 has a resolution of 120 m. It shows ground radiation temperatures and may serve to detect liquid water and to discriminate between features having similar reflectivities in the other bands, such as blue ice. Repeated Landsat images can be used for sophisticated glaciological studies. By comparing images from 1975 and 1985, flow rates averaging 0.72 km/a, and mean longitudinal and transverse strains of respectively .0013/a and 0.13/a have been measured for Jutulstraumen, Dronning Maud Land. (Auth.)

41-4446
Seasonal and regional variations of Northern Hemisphere sea ice as illustrated with satellite passive-microwave data for 1974.
Parkinson, C.L., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.119-126, 8 refs.
Sea ice distribution, Remote sensing, Ice conditions, Brightness, Ice temperature, Microwaves, Mapping, Seasonal variations.

41-4447
Satellite remote sensing of Vatnajökull, Iceland.
Williams, R.S., Jr., *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.127-135, 66 refs.
Glacier surveys, Remote sensing, Snow line, Glaciology, Geomorphology, Airborne equipment, Mountain glaciers, Volcanoes, Iceland.

41-4448
Comparison of observed and modeled ice motion in the Arctic Ocean.
Zwally, H.J., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.136-144, 14 refs.
Walsh, J.E.
Ice mechanics, Sea ice, Drift, Ice conditions, Remote sensing, Ice edge, Microwaves, Arctic Ocean.

41-4449
Remote sensing of sea-ice growth and melt-pool evolution, Milne Ice Shelf, Ellesmere Island, Canada.
Jeffries, M.O., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.145-150, 14 refs.
Sackinger, W.M., Serson, H.V.
Ice growth, Sea ice, Remote sensing, Ice shelves, Ice melting, Mapping, Photography, Canada—Northwest Territories—Ellesmere Island.

41-4450
Radio echo-sounding of sub-polar glaciers in Svalbard: some problems and results of Soviet studies.
Kotliakov, V.M., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.151-159, 28 refs.
Macheret, IU.IA.
Glacier surveys, Radio echo soundings, Glacier thickness, Glacier surges, Glacier melting, Radio waves, Seasonal variations, Norway—Svalbard.

41-4451
Airborne radio echo-sounding in Shirase Glacier drainage basin, Antarctica.
Mae, S., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.160-165, 13 refs.
Yoshida, M.
Glacier ice, Radio echo soundings, Aerial surveys, Antarctica—Shirase Glacier.
Airborne radio echo-sounding was carried out in order to measure the thickness of the ice sheet in the shirase Glacier drainage basin and map the bedrock topography. It was found that the elevation of bedrock was approximately at sea-level from Shi-

rase Glacier to 100 km up-stream of the glacier and thereafter it was 500-100 m higher. Investigation of the echo intensity reflected from the bedrock indicates that at ice thicknesses less than 1000 m absorption was about 5.2 dB/100 m, but at greater ice thicknesses echo intensity did not depend upon the ice thickness but became approximately constant. Where ice thicknesses were greater than 1000 m in the main flow area of the Shirase Glacier drainage basin, the reflection strengths of about 9 dB were greater than outside the basin. Since the increase in echo intensity was considered to be due to the existence of water, the strong echo observed in the main part of the basin supported the hypothesis that the base of the basin was wet and the ice sheet was sliding on the bedrock. (Auth.)

41-4452

Interpretation and utilization of areal snow-cover data from satellites.

Martinec, J., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.166-169, 7 refs.

Rango, A.

Snow cover distribution, Remote sensing, Snow water equivalent, Mapping, Snow melting, Snowfall, Seasonal variations.

41-4453

Imaging subglacial topography by a synthetic aperture radar technique.

Musil, G.J., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.170-175, 14 refs.

Doake, C.S.M.

Subglacial observations, Radar echoes, Antarctica—Bach Ice Shelf.

A synthetic aperture radar (SAR) technique has been used to image part of the grounding-line region of Bach Ice Shelf in the Antarctic Peninsula. The radar was sledge-mounted and operated in a pulsed mode with a carrier frequency of 120 MHz. The coherently detected output was recorded photographically as in-phase and quadrature components. Because the system was essentially stationary for each measurement, there was no doppler information about the reflecting points as in the more commonly used airborne and satellite-based SARs. Instead, the phase history was used directly to identify point targets by a correlation method. Three sounding runs were carried out over the grounding line to give views of the area from separate directions. An aperture length of 104 m was necessary to achieve 8 m resolution in the along-track direction for an ice thickness of 290 m. The mapped swath was 88 m wide. Corrections to the data were made to allow for density variations and absorption in the ice. The back-scatter coefficient showed greater variations in echo strength over grounded ice compared with floating ice and texture analysis of the radar image revealed a statistically significant difference between these two regimes. (Auth.)

41-4454

Evolution of under-water sides of ice shelves and icebergs.

Orheim, O., *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.176-182, 18 refs.

Ice shelves, Icebergs, Underwater ice, Antarctica—Weddell Sea.

A systematic program of side-scan sonar and plumb-line soundings was carried out in the Weddell Sea area in 1985 to measure the under-water sides of ice shelves and icebergs. From these observations the following model is suggested for the evolution of the ice front. (1) Initial stage: fracturing of the ice shelves takes place along smooth, curvilinear segments with vertical faces. (2) Formative stage: the freshly formed vertical face is eroded both by wave and swell action around the water line, by small calvings from the undercut, overhanging subaerial face, and by submarine melting. The melting has a minimum at 50-100 m depth and increases with depth to a rate of around 10 m/a at 200 m. This is about twice the rate of erosion at the water line. (3) Mature stage: this stage is reached after a few years of exposure. The backward erosion of the face leads to a shape with a prominent under-water "nose" with a maximum projection to more than 50 m at 50-100 m depth. The ramp above this slopes upwards to meet the vertical wall about 5 m below the water line. The ice below the nose is melted back beyond the above-water face. There is no net buoyancy and ice shelves at this mature stage are generally not up-warped at the front.

41-4455

Mapping of Amery Ice Shelf, Antarctica, surface features by satellite altimetry.

Partington, K.C., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.183-188, 31 refs.

Cudlip, W., McIntyre, N.F., King-Hele, S.

Mapping, Spaceborne photography, Ice shelves, Ice surface, Antarctica—Amery Ice Shelf.

Subtle changes are identified in altimeter wave forms associated with crevassed zones and the grounding line. Normal retracking procedures are shown to be inadequate in detecting such changes, and so methods which provide sensitive indication of the presence of these features in the sampled areas are devised. By ranging to the first return in the echo, the grounding line is identified, and by differencing this measurement with the half-peak power range, a measure of surface roughness is obtained which can be used to detect crevassed zones. Detection of crevassed shear zones allows delimitation of distinct zones of flow in the ice shelf which can be monitored by future altimeter missions. Monitoring of the grounding-line position can provide sensitive indication of mass-balance conditions over the grounded part of the drainage basin. (Auth.)

41-4456

Mass balance of south-east Alaska and north-west British Columbia glaciers from 1976 to 1984: methods and results.

Pelto, M.S., *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.189-194, 15 refs.

Glacier mass balance, Remote sensing, Climatic factors, Statistical analysis, United States—Alaska, Canada—British Columbia.

41-4457

Possibilities and limits of synthetic aperture radar for snow and glacier surveying.

Rott, H., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.195-199, 12 refs.

Mätzler, C.

Glacier surveys, Snow surveys, Backscattering, Airborne radar, Mapping, LANDSAT.

41-4458

Large-scale patterns of snow melt on Arctic sea ice mapped from meteorological satellite imagery.

Scharfen, G., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.200-205, 45 refs.

Snowmelt, Remote sensing, Sea ice, Albedo, Snow ice interface, Seasonal variations, Cloud cover, Air temperature.

41-4459

Digital radar system for echo studies on ice sheets.

Schultz, D.G., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.206-210, 10 refs.

Powell, L.A., Bentley, C.R.

Electronic equipment, Radar, Echo sounding, Ice sheets, Antarctica—Ross Ice Shelf.

A digital radar system comprising multiple microprocessors, for use with 50 MHz radar units modified from the Scott Polar Research Institute Mark IV design, is described. The major features of the system include coherent integration of radar traces, storage of data in raw digitized form without demodulation, real-time play-back of digitized information, and high system performance resulting in good spatial sampling with integration even in airborne operations. Unfocused synthetic beam shaping also results from the integration of echoes, thus reducing clutter or incoherent scattering from the sides of the beam pattern along the profiling track. Examples of data collected during the austral summer of 1985-86 in the Antarctic on ice stream B, in both ground and airborne programs, illustrate both the flexibility in data presentation and features present in the records. (Auth.)

41-4460

Fractures in arctic winter pack ice (North Water, northern Baffin Bay).

Steffen, K., *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.211-214, 11 refs.

Ice cracks, Pack ice, Infrared photography, Ice temperature, Fracturing, Statistical analysis, Ice surface, Latent heat, Ice air interface.

41-4461

Use of remote-sensing data in modelling run-off from the Greenland ice sheet.

Thomsen, H.H., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.215-217, 12 refs.

Braithwaite, R.J.

Runoff, Ice sheets, Remote sensing, Ice melting, Models, Hydrology, Drainage, Snow melting, Greenland.

41-4462

Impulse radar sounding of fossil ice within the Kuranosuke perennial snow patch, central Japan.

Yamamoto, K., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.218-220, 4 refs.

Yoshida, M.

Fossil ice, Radio echo soundings, Remote sensing, Glacier beds, Wet snow, Bottom topography, Profiles, Japan—Kuranosuke.

41-4463

Bottom topography and internal layers in east Dronning Maud Land, East Antarctica, from 179 MHz radio echo-sounding.

Yoshida, M., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.221-224, 13 refs.

Yamashita, K., Mae, S.

Ice sheets, Radio echo soundings, Bottom topography, Ice cores, Antarctica—Queen Maud Land.

Extensive echo-sounding was carried out in east Dronning Maud Land during the 1984 field seasons. A 179 MHz radar with separate transmitting and receiving antennae was used and the echoes were recorded by a digital system to detect minute reflections. The results gave cross-sections of the ice sheet along traverse routes from lat. 69 S to 75 S. Detailed observations on the ground at Mizuho station showed that there was elliptical polarization in the internally reflected echoes when two antennae, kept in parallel with each other, were rotated horizontally. The internal echoes were most clearly distinguished when the antenna azimuth was oriented perpendicular to the flow line of the ice sheet. The internal echoes with a high reflection coefficient were detected at depths of 500-700 m and 1000-1500 m at Mizuho station. Since a distinct internal echo at a depth of 500 m coincides with a 5 cm thick volcanic ash-laden ice layer found in the 700 m ice core taken near the observation site, these echoes may correspond to the acidic ice layers formed by past volcanic events in east Dronning Maud Land. (Auth.)

41-4464

Satellite snow-cover monitoring in the Qilian Mountains and an analysis for characteristics of stream snow-melt run-off in the Hexi region, Gansu, China.

Zeng, Q., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.225-228, 2 refs.

Zhang, S., Chen, X., Wang, J.

Snow cover distribution, Runoff, Snowmelt, Remote sensing, Water reserves, Stream flow, Meltwater, Seasonal variations, Mountains, Analysis (mathematics), China—Qilian Mountain.

41-4465

Antarctic ice-shelf boundaries and elevations from satellite radar altimetry.

Zwally, H.J., et al, *Annals of glaciology*, 1987, Vol.9, Symposium on Remote Sensing in Glaciology, 2nd, Cambridge, Sep. 8-9 and 11-12, 1986. Proceedings, p.229-235, 14 refs.

Stephenson, S.N., Bindschadler, R.A., Thomas, R.H.

Radar echoes, Mapping, Ice shelves, Altitude, Antarctica—Fimbul Ice Shelf, Antarctica—Amery Ice Shelf.

As part of a systematic analysis of Seasat radar altimetry data to measure antarctic ice fronts and ice-shelf elevations north of lat. 72S, Fimbulisen (between long. 12W and 08E) and the Amery Ice Shelf (around long. 72E) are mapped. Interactive computer analysis is used to examine and correct the altimetry range measurements and derive the ice-front positions. Surface elevations and ice-front positions from radar altimetry are compared with ice fronts, ice rises, crevasse zones, and grounding lines identified in Landsat imagery. By comparison of the visible features in imagery and the computer-contoured elevations from radar altimetry, the radar-elevation mapping on some ice rises is confirmed, but some spurious contours are also identified. During the interval between the 1974 Landsat imagery and the 1978 radar altimetry, the central part of the Amery Ice shelf front advanced 1.5 km/a, which is in agreement with previous ice-velocity measurements, suggesting negligible calving in the central part of the ice shelf. The undulating surface and small mean slope from the grounding line to about lat. 70S suggest a zone of partial grounding similar to Rutford Ice Stream. On Fimbulisen, some previously unmapped ice rises are identified. (Auth. mod.)

41-4466

Experience in studying thermal properties of ground. [Opyt issledovaniia teplofizicheskikh svoĭstv gruntov]

Zaĭtsev, V.S., *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia*, Mar. 1986, No.4, p.115-118, In Russian. 7 refs. Seriia tekhnicheskikh nauk, No.1.

Frozen ground temperature, Frozen fines, Sands, Clays, Peat, Measuring instruments, Thermal conductivity.

41-4467

Quantitative estimation of changes in physiographic structure of the Upper Kolyma basin induced by industrial activities. [Kolichestvennaia otsenka tekhnogennykh izmeneniĭ fiziko-geograficheskoĭ struktury basseĭna Verkhneĭ Kolymy]

Grigor'eva, N.N., et al, *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, July-Aug. 1986, No.4, p.9-13, In Russian.

Kriuchkova, G.A., Rakita, S.A., Riabova, L.M.

River basins, Permafrost distribution, Tundra, Forest tundra, Paludification, Human factors, Pollution, Mining, Grazing.

41-4468
Cryosphere and the zonality of soil melioration processes. [Kriosfera i zonal'nost' pochvenno-meliorativnykh protsessov],
Mel'nikov, P.I., et al, *Akademiia nauk SSSR. Doklady*, Mar.-Apr. 1986, 287(1), p.94-98, In Russian. 7 refs.
Kovda, V.A., Sharbatian, A.A.
Soil freezing, Cryogenic soils, Frost penetration, Land reclamation, Forest land, Paludification, Deserts.

41-4469
Conditions for the development of Late Pleistocene cryogenic formations in the central Russian plain. [Usloviia formirovaniia pozdneplеistotsenovykh merzlotnykh obrazovanii tsentra Russkoi ravniny],
Minervin, A.V., et al, *Akademiia nauk SSSR. Izvestiia. Seriia geograficheskaia*, May-June 1986, No.3, p.90-100, In Russian. 18 refs.
Porozhniakova, O.M.
Loess, Frozen fines, Permafrost structure, Ice veins, Patterned ground, Polygonal topography.

41-4470
Controlling soil temperature of bases using seasonally active cooling devices. [Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv],
Vialov, S.S., ed, Yakutsk, SO AN SSSR, 1983, 123p., In Russian. For individual papers see 41-4471 through 41-4481. Refs. passim.
DLC TA775.R43
Power line supports, Permafrost beneath structures, Pipes (tubes), Permafrost control, Air flow, Thermopiles, Air temperature, Artificial freezing, Electric power, Reinforced concrete.

41-4471
Experience and prospects of using self-contained steam-liquid cooling devices in construction on permafrost. [Opyt i perspektivy ispol'zovaniia avtonomnykh parozhidkostnykh okhlazhdaiushchikh ustroĭstv v stroitel'stve na vechnomerzlykh gruntakh],
Khrustalev, L.N., et al, Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.3-12, In Russian.
IAnchenko, O.M., Naumova, L.A.
DLC TA775.R43
Thermopiles, Buildings, Foundations, Permafrost bases, Permafrost control.

41-4472
Controlling temperature regime of frozen massive rocks in northern construction. [Upravlenie temperaturnym rezhimom merzlykh massivov v severnom stroitel'stve],
Makarov, V.I., Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.13-29, In Russian. 10 refs.
DLC TA775.R43
Permafrost thermal properties, Permafrost contro', Thermopiles, Permafrost bases, Foundations.

41-4473
Seasonally active ground cooling devices used in hydraulic construction. [Issledovanie sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv dlia promorazhivaniia gruntov v gidrotekhnicheskom stroitel'stve],
Buchko, N.A., Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.29-40, In Russian. 9 refs.
DLC TA775.R43
Permafrost control, Artificial freezing, Hydraulic structures, Thermopiles, Earth dams.

41-4474
Using artificial cooling devices in permafrost areas. [Opyt ispol'zovaniia okhlazhdaiushchikh ustanovok v raĭonakh rasprostraneniia vechnoĭ merzloty],
Gapeev, S.I., Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.41-58, In Russian.
DLC TA775.R43
Permafrost control, Artificial freezing, Thermopiles, Permafrost bases, Permafrost thermal properties.

41-4475
Regularities governing the development of forms of artificially frozen zones obtained by seasonally active freezing devices. [O zakonomernostiakh formoobrazovaniia zony promorazhivaniia grunta sezonnodeĭstvuiushchim okhlazhdaiushchim ustroĭstvom],
Koval'kov, V.P., Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.58-71, In Russian. 4 refs.
DLC TA775.R43
Design, Thermopiles, Permafrost control, Artificial freezing, Frost penetration, Permafrost thermal properties, Heat transfer, Heat transfer.

41-4476
Air-convection cooling devices. [Vozdushno-konvektivnye okhlazhdaiushchie ustroĭstva],
Konovalov, A.A., Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.71-77, In Russian. 6 refs.
DLC TA775.R43
Permafrost control, Active layer, Artificial freezing, Air flow, Air temperature, Frozen ground temperature.

41-4477
Erection of residential buildings, without ventilated crawl spaces, in permafrost areas. [K voprosu o vozvedenii zhilykh zdaniĭ v raĭonakh rasprostraneniia vechnomerzlykh gruntov bez provetriavaemykh podpoliĭ],
Maksimov, G.N., et al, Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.77-81, In Russian.
Smirnov, V.D.
DLC TA775.R43
Residential buildings, Reinforced concretes, Permafrost beneath structures, Permafrost control.

41-4478
Interaction of thermopiles with artificially frozen bases. [Vzaimodeĭstvie termosvaĭ s promorazhivaemym osnovaniem],
Mirenburg, IU.S., et al, Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.82-88, In Russian. 4 refs.
Fedoseev, IU.G.
DLC TA775.R43
Permafrost beneath structures, Permafrost control, Thermopiles, Artificial freezing.

41-4479
Using thermopiles for construction in the Vorkuta region. [Opyt ispol'zovaniia termosvaĭ pri stroitel'stve v Vorkutinskom raĭone],
Aleksandrov, IU.A., Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.88-94, In Russian.
DLC TA775.R43
Permafrost beneath structures, Permafrost bases, Permafrost control, Thermopiles.

41-4480
Using thermopiles in cooling plastic frozen ground. [Okhlazhdenie termosvaiami plastichno-merzlykh gruntov],
Petrov, B.G., et al, Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.94-107, In Russian. 7 refs.
Spiridonov, V.V.
DLC TA775.R43
Permafrost physics, Plastic properties, Permafrost hydrology, Permafrost control, Thermopiles, Temperature measurement, Measuring instruments.

41-4481
Using thermopiles in network construction. [Nekotorye voprosy primeneniia termosvaĭ v setevom stroitel'stve],
Smirnov, V.N., Regulirovanie temperatury gruntov osnovaniia s pomoshch'iu sezonnodeĭstvuiushchikh okhlazhdaiushchikh ustroĭstv (Controlling soil temperature of bases using seasonally active cooling devices) edited by S.S. Vialov, Yakutsk, SO AN SSSR, 1983, p.108-118, In Russian.
DLC TA775.R43
Electric power, Power lines, Power line supports, Permafrost beneath structures, Thermopiles, Pile structures.

41-4482
Developing and standardizing methods of determining the structural properties of frozen grounds. [Standartizatsiia i razvitie metodov opredeleniia stroitel'nykh svoĭstv merzlykh gruntov],
Sadovskiĭ, A.V., et al, *Osnovaniia, fundamenty i mekhanika gruntov*, May-June 1983, No.3, p.19-21, In Russian. 7 refs.
Maksimiak, R.V., Roman, L.T., Shilin, N.A.
Permafrost bases, Frozen ground strength, Foundations, Permafrost thermal properties, Building codes, Design.

41-4483
Determining the thermal conductivity coefficient for thawed and frozen grounds. [Opredelenie coeffitsienta teploprovodnosti talykh i merzlykh gruntov],
Danielian, IU.S., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia*, Feb. 1983, No.3, p.20-24, In Russian. 6 refs. Seriia tekhnicheskikh nauk, No.1.
Zaĭtsev, V.S., Kudriavtsev, e.A.
Ground water, Frozen ground physics, Laboratory techniques, Equipment, Water temperature, Phase transformations, Thermal properties, Measuring instruments.

41-4484
Land reclamation under permafrost conditions. [Melioratsiia zemel' v usloviiakh vechnoĭ merzloty],
Gidrotekhnika i melioratsiia, Feb. 1984, No.2, p.19-24, In Russian.
Permafrost distribution, Permafrost depth, Permafrost structure, Land reclamation, Permafrost hydrology, Thermokarst.

41-4485
New information on rock streams. [Novoe slovo o kurumakh],
Shvetsov, P.F., et al, *Geomorfologiia*, Oct.-Dec. 1983, No.4, p.103-105, In Russian.
Gravis, G.F.
Slope processes, Soil erosion, Rock streams, Geocryology, Frost weathering, Solifluction, Active layer, Freeze thaw cycles.

41-4486
Engineering for man-made islands. *Dock and harbour authority*, Nov. 1986, 67(784), p.155-158.
Artificial islands, Ice control.

41-4487
Interaction between subtropical high and polar ice in Northern Hemisphere.
Fang, Z., *Science bulletin (Kexue tongbao)*, Mar. 1987, 32(5), p.330-335, 2 refs.
Sea ice, Ice air interface, Air water interactions, Meteorological factors.

41-4488
Statistical and geometrical definition of snow avalanche runout.
McClung, D.M., et al, *Cold regions science and technology*, Feb. 1987, 13(2), p.107-119, 9 refs.
Lied, K.
Avalanche deposits, Avalanche mechanics.

41-4489
Finite element method for analysis of frozen earth structures.
Soo, S., et al, *Cold regions science and technology*, Feb. 1987, 13(2), p.121-129, 12 refs.
Wen, R.K., Andersland, O.B.
Soil creep, Frozen ground mechanics, Excavation, Walls.

41-4490
Atmospheric icing load measurements on a cable using the end tension.
McComber, P., et al, *Cold regions science and technology*, Feb. 1987, 13(2), p.131-141, 9 refs.
Druez, J., Bouchard, D., Falgueyret, A.
Power line icing, Ice loads, Ice accretion.

41-4491
Outward flux of vapour from frozen soils at Mayo, Yukon, Canada: results and interpretation.
Smith, M.W., et al, *Cold regions science and technology*, Feb. 1987, 13(2), p.143-152, 31 refs.
Burn, C.R.
Ice sublimation, Evaporation, Frozen ground thermodynamics, Frozen ground temperature, Vapor diffusion.

41-4492
Microwave snow signatures (1.5 mm to 3 cm) over Alaska.
Chang, A.T.C., et al, *Cold regions science and technology*, Feb. 1987, 13(2), p.153-160, 12 refs.
Foster, J.L., Hall, D.K.
Snow physics, Microwaves, Snow cover structure.

41-4493
Modelling of Labrador Sea pack ice, with an application to estimating geostrophic currents.
Keliher, T.E., et al, *Cold regions science and technology*, Feb. 1987, 13(2), p.161-176, 18 refs.
Venkatesh, S.
Sea ice, Pack ice, Drift.

41-4494
Modelling ice accretion on non-rotating cylinders: the incorporation of time dependence and internal heat conduction.
Szilder, K., et al, *Cold regions science and technology*, Feb. 1987, 13(2), p.177-191, 20 refs.
Lozowski, E.P., Gates, E.M.
Ice accretion, Thermal conductivity.

41-4495
Deviation of guidelines for blasting floating ice.
Mellor, M., *Cold regions science and technology*, Feb. 1987, 13(2), MP 2247, p.193-206, 12 refs.
Ice blasting, Projectile penetration, Floating ice.

41-4496
Role of fracture in the attenuation rate of stress waves in snow.
Hansen, A.C., et al, *Cold regions science and technology*, Feb. 1987, 13(2), p.207-212, 8 refs.
Brown, R.L.
Snow cover structure, Wave propagation, Attenuation, Snow deformation.

41-4497
Signs of "semiarid" pediplanation on Mars. [Priznaki "semiaridnoĭ" pediplanatsii na Marse],
Polosukhin, V.P., *Geomorfologiia*, July-Sep. 1987, No.3, p.79-85, In Russian with English summary. 24 refs.
Mars (planet), Planetary environments, Geocryology, Slope processes, Rock glaciers, Solifluction, Theories.

41-4498
Drilling instruments made of extra-hard materials. Collection of scientific papers. [Burovoĭ instrument iz sverkhtverdykh materialov. Sbornik nauchnykh trudov],
Vovchanovskiĭ, I.F., ed, Kiev, ISM AN USSR, 1986, 87p., In Russian. For selected paper see 41-4499.
Hardness tests, Rotary drilling, Frozen rock strength, Construction materials, Design.

41-4499
Drilling bits for hard rocks. [Burovoĭ ispolnitel'nyĭ organ dlia effektivnogo razrusheniia krepkikh gruntov],
Kosobrodov, IU.A., et al, Burovoĭ instrument iz sverkhtverdykh materialov. Sbornik nauchnykh trudov (Drilling instruments made of extra-hard materials. Collection of scientific papers) edited by I.F. Vovchanovskiĭ, Kiev, ISM AN USSR, 1986, p.61-65, In Russian.
Virovets, L.N.
Permafrost, Rotary drilling, Frozen ground strength.

41-4500
Research in building engineering. Structural thermodynamics. Service life of structures. [Issledovaniia po stroitel'stvu. Stroitel'naia teplofizika. Dolgovechnost' konstruktsiĭ],
Polonskiĭ, V.P., ed, Tallin, Valgus, 1986, 179p., In Russian. For selected papers see 41-4501 and 41-4502. Refs. passim.
Lightweight concretes, Construction materials, Reinforced concretes, Cellular concretes, Concrete aggregates, Cements, Water cement ratio, Phase transformations, Frost resistance, Permafrost beneath structures, Subpolar regions, Physical properties, Tests.

41-4501
Frost resistance of autoclaved materials. [Morozostoĭkost' avtoklavnykh materialov],
Pinsker, V.A., Issledovaniia po stroitel'stvu. Stroitel'naia teplofizika. Dolgovechnost' konstruktsiĭ (Research in building engineering. Structural thermodynamics. Service life of structures) edited by V.P. Polonskiĭ, Tallin, Valgus, 1986, p.31-39, In Russian. 12 refs.
Concrete structures, Concrete freezing, Concrete aggregates, Cements, Concrete admixtures, Frost resistance, Cellular concretes, Capillary ice, Tensile properties, Tests.

41-4502
Service life of enclosures. Present state and ways of developing the problem. [Dolgovechnost' ograzhdaiushchikh konstruktsiĭ. Sostoianie i puti razvitiia problemy],
Aleksandrovskiĭ, S.V., Issledovaniia po stroitel'stvu. Stroitel'naia teplofizika. Dolgovechnost' konstruktsiĭ (Research in building engineering. Structural thermodynamics. Service life of structures) edited by V.P. Polonskiĭ, Tallin, Valgus, 1986, p.122-167, In Russian. 52 refs.
Permafrost beneath structures, Buildings, Walls, Construction materials, Frost resistance, Reinforced concretes, Concrete freezing, Frost weathering, Freeze thaw cycles, Mathematical models, Polar regions.

41-4503
Contact interactions of materials with ice and snow covers. [Kontaktnoe vzaimodeĭstvie materialov so snezhno-ledovym pokrovom],
Igoshin, V.A., ed, Akademiia nauk SSSR. Sibirskoe otdelenie. IAkutskiĭ filial. Biulleten' nauchno-tekhnicheskoĭ informatsii, Yakutsk, SO AN SSSR:, 1984, 24p., In Russian. For individual papers see 41-4504 through 41-4510. Refs. passim.
Air water interactions, Ships, Icebreakers, Ice water interface, Snow ice interface, All terrain vehicles, Metal snow friction, Rubber snow friction, Metal ice friction, Ice navigation, Airplanes.

41-4504
Methods of studying contact interactions of materials with ice and snow. [Metodicheskie osnovy issledovaniia kontaktnogo vzaimodeĭstviia materialov so l'dom i snegom],
Igoshin, V.A., et al, Akademiia nauk SSSR. Sibirskoe otdelenie. IAkutskiĭ filial. Biulleten' nauchno-tekhnicheskoĭ informatsii. Kontaktnoe vzaimodeĭstvie materialov so snezhno-ledovym pokrovom (Contact interactions of materials with ice and snow covers) edited by V.A. Igoshin, Yakutsk, SO AN SSSR, 1984, p.3-7, In Russian. 15 refs.
Tiunina, E.L., Cherskiĭ, I.N.
Ice navigation, Icebreakers, Ships, Metal ice friction, Wood ice friction, Wood snow friction, All terrain vehicles, Rubber snow friction, Airplanes.

41-4505
Tribotechnical properties of fluoroplastic-4 and super-high molecular polyethylene in contact with ice and snow. [Tribotekhnicheskie svoĭstva ftoroplasta-4 i sverkhvysokomolekuliarnogo polietilena v kontakte so l'dom i snegom],
Egorov, E.N., et al, Akademiia nauk SSSR. Sibirskoe otdelenie. IAkutskiĭ filial. Biulleten' nauchno-tekhnicheskoĭ informatsii. Kontaktnoe vzaimodeĭstvie materialov so snezhno-ledovym pokrovom (Contact interactions of materials with ice and snow covers) edited by V.A. Igoshin, Yakutsk, SO AN SSSR, 1984, p.8-10, In Russian.
Postol, V.I., Listkov, V.M.
Polymers, Ice adhesion, Plastics ice friction, Plastics snow friction.

41-4506
Adfreezing of the materials of skis' sliding surfaces to snow and ice. [Primerzaemost' materialov skol'ziashcheĭ poverkhnosti lyzh k snegu i l'du],
Ermakov, K.K., Akademiia nauk SSSR. Sibirskoe otdelenie. IAkutskiĭ filial. Biulleten' nauchno-tekhnicheskoĭ informatsii. Kontaktnoe vzaimodeĭstvie materialov so snezhno-ledovym pokrovom (Contact interactions of materials with ice and snow covers) edited by V.A. Igoshin, Yakutsk, SO AN SSSR, 1984, p.10-12, In Russian.
Skis, Construction materials, Adhesion, Snow, Ice, Plastics ice friction, Plastics snow friction.

41-4507
Coefficient of friction of the materials of sliding surfaces of skis during movement in snow. [Koeffitsient treniia materialov skol'ziashcheĭ poverkhnosti lyzh pri dvizhenii po snegu],
Ermakov, K.K. Akademiia nauk SSSR. Sibirskoe otdelenie. IAkutskiĭ filial. Biulleten' nauchno-tekhnicheskoĭ informatsii. Kontaktnoe vzaimodeĭstvie materialov so snezhno-ledovym pokrovom (Contact interactions of materials with ice and snow covers) edited by V.A. Igoshin, Yakutsk, SO AN SSSR, 1984, p.12-15, In Russian. 4 refs.
Skis, Plastics snow friction, Polymers, Wood snow friction, Wood ice friction, Plastics ice friction, Adhesion, Loads, Analysis (mathematics).

41-4508
Problem of diminishing the force of icebreaker friction against ice. [Problema snizheniia sily treniia ledokola o led],
Maksutov, D.D., Akademiia nauk SSSR. Sibirskoe otdelenie. IAkutskiĭ filial. Biulleten' nauchno-tekhnicheskoĭ informatsii. Kontaktnoe vzaimodeĭstvie materialov so snezhno-ledovym pokrovom (Contact interactions of materials with ice and snow covers) edited by V.A. Igoshin, Yakutsk, SO AN SSSR, 1984, p.15-16, In Russian.
Ice navigation, Icebreakers, Ships, Metal ice friction, Wood ice friction, Pack ice, Ice cover thickness.

41-4509
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Ice navigation, Ice cover thickness, Ice breaking, Ice adhesion, Snow accumulation, Snow cover distribution, Ships, Icebreakers.

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Ice wedges, Permafrost, Glaciation, Pleistocene, Geomorphology, Boreholes, Sounding, Paleoclimatology, Periglacial processes, United Kingdom—Severn River.

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Mining, Excavation, Machinery, Equipment, Construction materials, Frozen fines, Coal.

41-4526
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Aircraft landing areas, Snow roads, Runways, Snow compaction, Snow temperature, Solar radiation, Air temperature, Snow stratigraphy, Wind velocity, Wind direction, Snowdrifts, Particle size distribution, Statistical analysis, Antarctica—Casey Station.
This report tabulates data collected at the proposed site of the Casey compressed snow runway during the 1983-84 summer season. The data refer generally to snow properties although the meteorological data, which was collected primarily as a record of the conditions experienced by the snow, stand also as a weather record for the period. The results of studies on snow stratigraphy, density and particle size distributions are tabulated for the *in situ* material, new and aged drift snow, compacted natural snow, processed snow, and compacted processed snow. Rammsonde and Scala penetrometer tests on the same range of snow are also tabulated as are the results of California Bearing Ratio tests. The performance of a 200 mm thick test-pavement was assessed by a 600 mm diameter plate loaded to 16.2 Mg. The settlement during a 2.5 h test period is tabulated. (Auth. mod.)

41-4527
Casey snow runway tests, 1983-84.
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Budd, W.F., Moore, P.J.
Aircraft landing areas, Snow roads, Runways, Snow density, Snow loads, Snow strength, Snow compression, Snow ice interface, Equipment, Snow temperature, Pavements, Particle size distribution, Penetrometers, Tests, Antarctica—Casey Station.
This report describes the methods and equipment used to collect data at the proposed site of the Casey compressed snow runway during the 1983-84 summer season, and includes some analysis of the data obtained. The main purpose of the snow testing work was to assess the condition and strength of the *in situ* snow and of snow processed to form a pavement. The stratigraphy, density and particle size distributions for the *in situ* material, new and aged drift snow, compacted natural snow, processed snow, and compacted processed snow were obtained. Rammsonde and Scala penetrometer tests on the same types of snow were also obtained. Snow strength was assessed by California Bearing Ratio (CBR) tests. The results of the 1983-84 testing program demonstrate that a pavement strong enough to support C-130 aircraft loads can be constructed at the Lanyon Junction site with the types of snow-processing and road working-equipment used for the trials. (Auth. mod.)

41-4528
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This report consists of the set of meteorological and glaciological data collected at site of the proposed Casey Station compressed snow runway during Jan. and Feb. 1984. The data is presented in numerical and graphical form. The parameters measured are air temperature, snow temperatures at depths of 0.1 m, 0.2 m, 0.5 m, and 1.0 m, solar radiation, wind speed and direction. The data were collected every 15 minutes from 19 Jan. to 8 Feb. Snow temperatures from 19 to 25 Jan. are not reliable because the snow in which the sensors were buried had become contaminated by ash from a fire. The snow temperatures from 29 Jan. were recorded in virgin firn and are reliable. Apart from the problems with the snow temperatures, the data set is fairly complete and forms a good record of the local meteorological conditions. (Auth. mod.)

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Marine geology, Geomorphology, Icebergs, Ice scoring, Antarctica—Mertz Bank, Antarctica—Wilkes Land.
Sidescan sonar data were obtained on a track parallel to the coast from the top of Mertz Bank (200 m) to the floor of Mertz Trough (600 m). Sparse ice gouge features occur to depths of over 500 m and typically form multiple-grooved incisions a few meters deep and tens of meters wide. The dominant bed forms on both the bank top and slope are circular to subcircular depressions 30-150 m in diameter. Locally these features are associated with ice gouges. They probably represent modern ice-resting sites indicating that modern sediment is being reworked by iceberg keels to depths of 500+ m. Deep draft ice is suggested by observed freeboards and extrapolation of measured iceberg drafts. The high concentration of depressions on the slope, their absence in the trough, and their subdued appearance on the bank top probably result from modern sediment reworking of older deposits on the bank top and sedimentation in the troughs. (Auth. mod.)

41-4546
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Mine shafts, Supports, Permafrost, Placer mining.

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Placer mining, Sampling, Excavation, Permafrost, Ground thawing, Electric heating.

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41-4553
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Placer mining, Mine shafts, Roofs, Supports, Piles, Ice (construction material), Artificial freezing, Permafrost.

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Mining, Excavation, Transportation, Frozen cargo, Polar regions.

41-4559
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Mining, Excavation, Transportation, Frozen cargo.

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Ice breakup, Ice conditions, Shore erosion, Ice rafting, USSR—Ob' River.

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Alpine landscapes, Mountain soils, Soil microbiology, Algae, Snow cover distribution, Snow composition, Bacteria.

41-4563
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Soil formation, Soil composition, Organic soils, Soil chemistry, Peat, Forest soils, Desert soils, Polar regions, Soil profiles.

41-4564
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Taiga, Loams, Forest soils, Organic soils, Soil formation, Cryogenic soils, Soil composition, Soil profiles.

41-4565
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Cryogenic soils, Loams, Organic soils, Forest soils, Taiga, Paludification, Peat, Podsol, Soil profiles.

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41-4596
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Helium-3 balance of the upper layers of the northwest Weddell Sea.
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Roether, W., Rohardt, G.
Ice formation, Gas production, Antarctica—Weddell Sea, Antarctica—Bransfield Strait.
Helium-3 data of the upper water column (800 m) at stations in the northwestern Weddell Sea and in the Bransfield Strait are presented and discussed in relation to the hydrography. From the observations a He-3 balance for the winter mixed layer is proposed, which allows to estimate the rate of entrainment of Warm Deep Water (WDW) into the Winter Water to be between 15 and 35 m y. The vertical eddy diffusivity within the pycnocline above the Warm Deep Water core is determined. Of the assumptions required to obtain the WDW entrainment estimate, that of quasi-stationarity of the gas transfer across the pycnocline appears to be the most critical one, but other assumptions appear to require further study as well. (Auth. mod.)

41-4603
Preliminary data on changes of lead concentrations in antarctic ice from 155,000 to 26,000 years BP.
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Ice cores, Impurities, Ice composition, Isotope analysis, Aerosols, Antarctica—Vostok Station.
Concentrations of lead (Pb) have been measured by ultraclean Isotope Dilution Mass Spectrometry in 6 sections of the 2083 m Vostok deep antarctic ice core which integrates some 155,000 years. Lead contamination of 15,000-32,000 pg Pb/g existed on the outside of the cores, but measured concentrations decreased abruptly along a radius from the outside to the center of the cores, establishing interior values in the 2-40 pg Pb/g range. These interior data show that natural concentrations of Pb have varied strongly in antarctic ice during the last 155,000 years: Pb values were high during the end of the ice age (Illinois) which preceded the last interglacial and during the Last Glacial Maximum; they were low during the last interglacial and most of the last ice age (Wisconsin) Soil dust appears to be the major source of natural Pb, but the volcanic contribution is found to be significant during low Pb time periods. (Auth.)

41-4604
Applying heat pipes to avoid the preferential freezing of highway bridge decks.
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Chemical ice prevention, Road icing, Salting, Ice removal, Snow removal, Trafficability, Safety.

41-4607
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Salting, Chemical ice prevention, Road maintenance, Corrosion, Damage, Winter maintenance, Road icing, Environmental impact, Cost analysis.

41-4608
Determination of the spallogenic radionuclides Al-26 and Mn-53 in antarctic meteorites with respect to cosmic ray exposure and terrestrial ages.
Herpers, U., et al, *Journal of radioanalytical and nuclear chemistry,* Mar. 1987, 110(1), p.191-195, 17 refs.
Sarafin, R.
Ice sheets, Ice dating.
The spallogenic radionuclides Al-26 and Mn-53 were determined in 11 ordinary chondrites and 7 achondrites from Antarctica by nondestructive coincidence counting techniques and radiochemical neutron activation analysis, respectively. The results are discussed with respect to exposure ages, terrestrial residence times and possible genetic relationships of the meteorites investigated. The high terrestrial ages of some specimens (up to 800,000 years) are of importance for the study of the ice flow in Antarctica. (Auth.)

41-4609
Archaeomonad (Chrysophyta) cysts: ecological and paleoecological significance.
Mitchell, J.G., et al, *Bio systems,* 1986, 19(4), p.289-298, Refs. p.297-298.
Silver, M.W.
Algae, Sea ice, Antarctica—Weddell Sea.
Archaeomonads are chrysophyte cysts abundant in Weddell Sea ice, but they form in the water column in response to conditions that occur in areas where no sea ice is present. The association between archaeomonads and sea ice depends on a particular sequence of oceanographic conditions, beginning with lateral advection followed by vertical harvesting on rising ice crystals. Comparing fossil and modern distributions suggests archaeomonads underwent an ecological transition or expansion in the Early Tertiary Period, from sediment underlying anoxic waters to sediments underlying sea ice. (Aut'i.)

41-4610
Pseudomonas bacteria from an antarctic glacial ice sheet.
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Glacier ice, Ice sheets, Colored ice, Bacteria.
Five strains of bacteria of the genus *Pseudomonas* were isolated from the ice sheet of a glacier near Vostok Station. Three of these were found at a depth of 79-81 m, and two at 91-92 m. The approximate age of these ice levels is 2100 and 2500 years, respectively. The strains differ in growth temperature, which may indicate differences in their origin. The distinctive trait of the bacteria is their ability to produce brown melanin-like pigment in addition to green fluorescing pigment. According to the array of phenotypic traits, the cultures are close to the species *P. putida* and *P. aeruginosa.* A basic characterization of the *Pseudomonas* bacteria isolated from the ice sheet is given, and possibilities of how they might have been introduced into the glacier are discussed. (Auth.)

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41-4612
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41-4613
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Stefan problem, Heat transfer, Mass transfer, Frost penetration, Phase transformations.

41-4614
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Smirnov, I.A.B., ed.
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Geothermy, Geophysical surveys, Drilling, Boreholes, Geothermometry, Measuring instruments, Maps, Geothermal properties, Arctic Ocean.

41-4615
Lowering piles into holes drilled with fire-jet drills in permafrost (the case of northern Tyumen' region). [Pogruzhenie svai v vechnomerzlye grunty s ispol'zovaniem ognestruinogo bureniia (iz opyta stroitel'stva na severe Tiumenskoi oblasti)].
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[Astrebov, E.K., Styron, B.K., Targulian, IU.O.
Pile driving, Permafrost, Boreholes, Thermal drills.

41-4616
Increase in the borehole drilling rates and reduction in the duration of pile freezing in permafrost through the use of a steam vibro-leading machine. [Povyshenie skorosti bureniia skvazhin i sokrashchenie prodolzhitel'nosti vmerzaniia svai pri ispol'zovanii parovogo vibrolidera].
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Pile driving, Thermal drills, Permafrost, Piles.

41-4617
Experimental thawing of the permafrost base beneath the reconstructed main body of the Chita-I heat and electric power plant. [Opytnoe ottaivanie vechnomerzlykh gruntov osnovaniia rekonstruktsii glavnogo korpusa Chitinskoi TETs-I].
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Shmyrin, A.I.
Permafrost bases, Industrial buildings, Permafrost beneath structures, Artificial thawing, Experimentation.

41-4618
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41-4619
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Ice surveys, Sea ice distribution, Radar photography, Precipitation (meteorology), Photointerpretation, Arctic Ocean.

41-4620
Determining the velocity of sea-surface wind from radar data of the *KOSMOS-1500* satellite. [Opredelenie skorosti privodnogo vetra po radiolokatsionnym dannym ISZ "KOSMOS-1500"].
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Spiridonov, IU.G.
Atmospheric circulation, Radar photography, Wind velocity, Sea ice distribution, Ice physics.

41-4621
Possibilities of the landscape-indication method for engineering-geological studies of northern West Siberia. [Vozmozhnosti landshaftno-indikatsionnogo metoda pri inzhenerno-geologicheskikh issledovaniiakh na severe Zapadnoi Sibiri].
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Engineering geology, Surveys, Mapping, Forest tundra, Continuous permafrost.

41-4622
Thermodynamics and kinetics of cryogenic deformation of pore-space structure in water saturated disperse rocks. [Termodinamika i kinetika kriogennogo deformirovaniia struktury porovogo prostranstva vlagonasyshchennykh dispersnykh porod].
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Fines, Porosity, Water content, Frost penetration.

41-4623
Discussion on topics of engineering-geological investigations of permafrost. [Obsuzhdaiutsia voprosy inzhenerno-geologicheskikh izyskanii v oblasti vechnoi merzloty].
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Levkovich, A.I., Trush, A.I., Shibakova, V.S.
Maps, Meetings, Research projects, Permafrost distribution, Permafrost forecasting, Permafrost physics, Permafrost thermal properties, Cold weather construction, Baykal Amur railroad.

41-4624
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